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# Up-skilling the VET sector to Cloud Computing

## KA220-VET - Cooperation partnerships in vocational education and training

## NATIONAL REPORT

## TÜRKİYE



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# Content


## 1. Desk Research; Best Practices

## 2. Field Research

2.1. Analysis of Survey Results

2.2. Analysis of Focus Group Study

## 3. Implications and Conclusions


The research report consists of three parts; Desk research, Survey and Focus group research and implications and conclusions.

Objectives of the research;

1- To define and to understand the state-of-the-art regarding the specific sector of Cloud Computing in partners countries, analyzing the specific needs and gaps in the sector

2- To assess the professional skills needed in the labor market for a VET provider, designed in accordance with the European lifelong learning instruments (EQF).


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## 1. Desk Research; Best Practices

The four best practices that address at least one of the topics associated with the project. Some examples of topics are listed below:

- Adapting vocational education and training to labor market needs;
- Addressing digital transformation through development of digital readiness, resilience and capacity;
- Cloud Computing teaching;
- ICT skills for VET providers;
- qualifications and skills in the cloud computing field

Please consider that the best practice research has to focus on the existing best practice focusing on the specific target group of the project (VET providers and VET learners).

**Best Practice n. : 1**

**Best Practice title: EDUCATIONAL INFORMATION NETWORK (EBA) (education platform)**

**Project partner: NICEA KÜLTÜR VE EĞİTİM DERNEĞİ**

| | |
|---|---|
| **Topic** | Addressing digital transformation through development of digital readiness, resilience and capacity |
| **Best practice Title** | **EDUCATIONAL INFORMATION NETWORK (EBA)** |
| **Keywords** | Cloud computing, education platform |
| **Best practice** | |
| Education Information Network (EBA) is as a cloud-based online education platform offered free of charge to students and teachers by the General Directorate of Innovation and Education Technologies of Türkiye. EBA platform is one of the sub- projects of the FATIH project, (Movement to Increase Opportunities and Improve Technology) is an initiative of the Ministry of National Education of the Republic of Turkey that aims to use technology in education. The EBA system is a system that includes educational content as well as educational tools that can be used by both teachers and students. In EBA, there are resources in the form of video narration as well as text, sound and picture resources. EBA provides opportunities for uploading files, providing digital space, storing content, organising competitions, making announcements, and sharing classes suitable for different levels. EBA platform was founded in 2012, at the beginning, it was a database for teachers and students to upload new educational materials and download materials | |

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uploaded by experts and other teachers to foster academic success in the education system.
EBA was the key education provider for all levels of education during the COVID-19 pandemic. After the pandemic, it was used as a tool of hybrid education, and now some teachers and students use it as an additional source to school education.

Objectives of EBA are; To integrate technology to education.

To disseminate the culture of digitised education all around Türkiye.

To respond the educational needs of different target groups

To provide teachers and students with a space to exchange knowledge, skills and experience.

To provide a space to create large archive of content

Target groups/ beneficiaries are; Teachers and students who are the participants of the Turkish National Education System.

Activities and methodologies;

EBA platform consists of several parts. Parts and their function are presented below briefly. EBA Lesson Section;

Teachers' Part; teachers both used materials produced by experts and can produce their own materials like content, exam, competitions and other visual and audio materials. Teachers can assign students with homework, exam or more and

EBA Student Part; In this part, students share messages, they can initiate discussion and voting. Also they can see the messages shared by teachers and other students and participate in discussions and voting. In this part, students share messages, they can initiate discussion and voting. Also they can see the messages shared by teachers and other students and participate in discussions and voting. Students also have the option to comment on messages, send likes, add the message to their favorites and share the message with their own name.

Content Section; In this section, there are news, video, visual, audio, e-book, e-journal and document subsections.

News Section; In the EBA news section, newsworthy works of students, teachers and schools are shared with all EBA users.

EBA Video Section; In this section, videos are offered to users on lectures, presentations, various experiments, current issues, social and educational projects and many more.

Visual Section; In this section, courses, projects, studies and many other subjects are presented to users in visual form.

Audio Section; In the EBA audio section, users can access audio recordings on lectures, introductions, help, music, fairy tales and many more.

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Book Section; In this section, users can access books on lessons, introductions, help, games, fairy tales and many other subjects.

Journal section; In this section, users can access journals on courses, promotions, help, education and many other subjects.

EBA Document Screen; In the EBA document section, users can access many documents shared by teachers, such as assignments, written questions, lecture presentations, projects, in pdf, Word or PowerPoint format.

Competition section; In the EBA competition section, users can participate in various competitions by presenting their talents in artistic, cultural and scientific fields.

Applications section; The EBA applications section offers applications in education, art, entertainment and many more for users.

File Section; This section enables teachers and students file storage and sharing. Students are offered 1 GB of cloud storage, teachers 10 GB.

Blog Section; The EBA Blog section is a space where users can share their memories, articles, projects, opinions and thoughts on any subject, and make their voices heard.

Tools section; This section consists of two parts, content development tools and utilities.

Quantitative and qualitative outcomes; EBA was founded in 2012 as a part of the Fatih Project. During the COVID-19 pandemic, it was the primary source of education for students at all levels. %87 of all students and teachers were actively using the system. Now it is not the main source of education; it is a complementary tool both for teachers and students that is why the number of active users varies daily now.

Impact; EBA was founded as a complementary platform for teachers and students. Because of its cloud-based systems, teachers and students were able to find a place that was specific to them, which allowed them to share what they had produced and store it for future use. It has been helpful, especially for the students who have disadvantages like a disability, cannot attain a formal education because of geography, are nomads, and more. EBA has created a sense of balance among all students.It also motivated teachers to be creative and productive. Teachers created a variety of content, activities, exams, and other materials that are used by teachers all over Turkey. It has increased the academic success of students. Students have had a platform to revise, exercise, and learn from each other.

| | |
|---|---|
| **Reference Link (if any)** | https://www.eba.gov.tr/ |
| **Provided By** | *- Name of the Institution/Partner that implemented the practice:* Stakeholders; General Directorate of Innovation and Education Technologies and Ministry of National Education<br><br>*- Contact of the Institution/Partner (name, email, telephone): 0312* |

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| | *4132680 - 0312 4132681 - 0312 4131838*<br><br>*- Name of the Strategy/Programme: 2023 Education Vision/ Fatih Project*<br><br>*- Other useful information (if any):* |
| **Language** | TÜRKÇE |

**Best Practice n. : 2**

**Best Practice title:** Development of Innovative Learning and Practicing Modules, Implemented in Cloud Computing and IoT in Digital Industry (Project)

**Project partner:** NICEA KÜLTÜR VE EĞİTİM DERNEĞİ

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|---|---|
| **Topic** | • qualifications and skills in the cloud computing field |
| **Best practice Title** | Development of Innovative Learning and Practicing Modules, Implemented in Cloud Computing and IoT in Digital Industry |
| **Keywords** | ICT - new technologies - digital competences |
| **Best practice** | |
| The overall objective of the project is to develop innovative, modern and easy-to-implement learning and practising modules in the areas of Cloud Computing and IOT, which are located within the Industry 4.0 area at the VET Schools of IT and universities.<br><br>Objectives of the project:<br><br>1:Training 10 volunteers vocational teachers, academicians or educators who are selected among the local partners of the project and vocational education institutions working in similar fields in Cloud Computing and IOT areas in order to provide the manpower of our country as qualified teachers, lecturers / instructors in Cloud Computing and IOT fields.<br><br>2:In order to provide qualified manpower of our country grown in Cloud Computing and IOT areas; a training will be provided by our project partner, BFU University and EVM, for 10 students who will be enrolled these courses officially in Cloud Computing and IOT areas. Beside, a pilot scheme will be applied to 40 students studying at Zonguldak MTAL (silent pilot partner). | |

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Coordinator; Zonguldak Ticaret ve Sanayi Odası

Partners; BUCKINGHAMSHIRE NEW UNIVERSITY (UK)
GT-ARC GEMEINNUTZIGE GMBH (DE) ,
ECOSISTEMAS VIRTUALES Y MODULARES SL (ES)
BURGASKI SVOBODEN UNIVERSITET (BG)

Target groups/ beneficiaries are; VET Providers, labour market stakeholders, teachers, trainers, VET students

Activities and methodologies;

* Activities that encourage the implementation, development and testing of innovative practices in education, training and youth (our outreach outcomes, our products and short- term training activities are suitable for this title)

*Activities facilitating the approval and recognition of knowledge, skills and competences acquired through formal and informal learning (opening the courses at the undergraduate level and crediting them in ECTS with international validity).

*Seminars, conferences, press announcements to be held within the scope of dissemination activities

Results;

- Modern and innovative learning and practicing modules in the easy-to-implement Cloud Computing and IOT areas
- E-Learning Platform for the delivery of lesson learning and practicing modules to every segment of society
- To raise awareness: -Conferences, seminars -Project Magazine, Brochure, CDS, Website -Informing the public through the media and publishing organs -Posters.

"Instructional System Design '' will be referred to in the development of the project products and in the development of the learning and practicing modules which are our intellectual outputs. "ADDIE Model '' was chosen as the project methodology. This model is a systematic approach model based on Analysis, Design, Development, Implementation and Evaluation processes. All the work of our project will be carried out in accordance with the principles of "satisfaction, process improvement, teamwork and decisions are based on actual evidence".

Quantitative and qualitative outcomes; In addition to active participants (55 persons per partner) of the project, each institution gave a seminar about the project and its outputs. It targeted more than 350 people per partner.

Impact;
- Raised awareness of VET providers and teachers about use of cloud computing in VET sector
- Trained educators and students on practical use of cloud computing
- Developed an e- Learning platform

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|---|---|
| **Reference Link (if any)** | https://cciot-edu.eu/the-project/ |
| **Provided By** | ***- Name of the Institution/Partner that implemented the practice:*** Zonguldak Ticaret ve Sanayi Odası<br>***- Contact of the Institution/Partner (name, email, telephone):*** http://webmail.ztso.org.tr/ +90 0(372)251 11 11<br>***- Name of the Strategy/Programme:*** *Erasmus+ VET*<br>***- Other useful information (if any):*** |
| **Language** | English/ Türkçe |

**Best Practice n. : 3**

**Best Practice title:** A Holistic Approach for Upskilling Competences of SMEs, VET Institutions and VET Providers for Preparing the Future Works in the Digital Era (Project)

**Project partner:** NICEA KÜLTÜR VE EĞİTİM DERNEĞİ

| | |
|---|---|
| **Topic** | • ICT skills for VET providers |
| **Best practice Title** | A Holistic Approach for Upskilling Competences of SMEs, VET Institutions and VET Providers for Preparing the Future Works in the Digital Era |
| **Keywords** | *ICT, VET providers, Future work, digital era* |
| **Best practice** | |
| In 2019, the International Labour Organization published a report which points out that in almost every country SMEs are an important factor of job development and account for an increasing share of employment. Digital innovation has the capacity to transform practices, raise performance and increase growth across all industry sectors. Digital change wants that individuals need the necessary skills to adapt. This will necessitate changes to educational systems and an increased need for on the job training to understand the benefits of digital change.<br><br>Objectives of the project; Project aims to upskill the competences of SMEs, VET Institutions and VET Providers in a holistic way in order to prepare them for future work in the digital era. | |

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Activities

The project will achieve its objective through focusing on these two issues: (1) What kind of jobs will the market need in the next few years? (2) What kind of competence do educational organizations need to teach? For the first question, It can be said that forthcoming employment needs a high level of knowledge and skills and constant assets in education is required in order to deal with the rate of change brought about by developments in digital technology. The project worked not only with SMEs to help them develop their future workforce, meeting their current and future needs, but also with VET institutions and VET providers to mitigate their inefficiencies in shaping the future workforce in SMEs.

Target Group -The first group are the SMEs or owners of the SMEs and managers or human resources managers of the SMEs that aim to shape their future work and employment process. -The second group are the VET institutions and VET providers, universities, professional organizations, Chambers, research centers, policy makers, public authorities and other stakeholders who specifically focus on the needs of SMEs in the age of the digital era.

Project results

-The holistic approach will provide the gap analysis between existing competences and future competences of SMEs and VET institutions/providers for future jobs and competences in partner countries.

-The holistic approach, which includes tracking and developing skills governance model for shaping the future of the work force, will provide good workforce planning for SMEs and VET institutions/providers.

- The holistic approach will provide a guide including how SMEs and VET institutions/providers can deal with shaping the future of work in their organizations via upskilling competences of both existing employees and future employees.

-The holistic approach will provide how VET Institutions and VET Providers can build a dual side relationship and communication which not only increases the competences of the workers but also upskills the employers and SMEs.

-The holistic approach will provide how SMEs of the project can develop “Hol Up Self-paced Open Online Course” and how VET Institutions and VET Providers can meet the requirements of the digital era.

Impact; Project created awareness on upskilling policy as an increasingly popular approach taken by forward-thinking SMEs, help SMEs overcome barriers to growth and competitiveness not only in private sector but also in the public sector, provide easy access/preparation to future workforce community, which allows to exchange experiences from different European Countries, provide a road map for SMEs and VET institutions/providers in order to fill the unemployment gap and contribute to build the future.

| | |
|---|---|
| **Reference Link (if any)** | http://www.holup.mu.edu.tr/en |
| **Provided By** | *- Name of the Institution/Partner that implemented the practice:* |

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| | MUĞLA SITKI KOCMAN UNIVERSITY<br><br>- *Contact of the Institution/Partner (name, email, telephone):* http://www.mu.edu.tr/tr , (0252) 211 10 00<br><br>- *Name of the Strategy/Programme:*Erasmus+ Key Action: Cooperation for innovation and the exchange of good practices Action Type: Partnerships for Digital Education Readiness<br><br>- *Other useful information (if any):* |
| **Language** | English/Italian/Spanish/Czech/ Romanian/Portuguase |

**Best Practice n. : 4**

**Best Practice title:** Career in Cloud Computing: Exploratory Analysis of in-Demand Competency Areas and Skill Sets (Research)

**Project partner: NICEA KÜLTÜR VE EĞİTİM DERNEĞİ**

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|---|---|
| **Topic** | • Adapting vocational education and training to labour market needs; |
| **Best practice Title** | Career in Cloud Computing: Exploratory Analysis of in-Demand Competency Areas and Skill Sets |
| **Keywords** | Cloud computing; skill requirements; competency areas; topic modeling; job-posting analysis; text mining |
| **Best practice** | |
| Objectives of the research; This research aims to investigate up-to-date career opportunities and in-demand competence areas and skill sets for cloud computing, which plays a crucial role in the rapidly developing teleworking environments with the COVID-19 pandemic.<br><br>Methodology; In this paper, researchers conducted a semantic content analysis on 10,161 cloud computing job postings using semi-automated text-mining and probabilistic topic-modeling procedures to discover the competency areas and skill sets as semantic topics.<br><br>Target Group; Labour market stakeholder, policymakers, teachers, trainers, young people<br><br>Research results; In this study, a semantic content analysis was performed on CC job postings using textmining and topic-modeling procedures in order to reveal the competency areas, knowledge domains, and skills sets demanded by the CC industry. This study found that (1) the discovered competency areas and skills also reveal the emerging trends and demands in the CC industry, as well as the required | |

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qualifications for CC professionals; (2) CC expertise requires a wide spectrum of knowledge, skills, and abilities with an interdisciplinary background; and (3) as leading actors, CC professionals can undertake different roles (22 competency areas and 875 different job titles) that require comprehensive skill sets that combine many technical and soft skills (46 different skills).

Impact; Since there is no experimental study in this context in the literature, this study is expected to make significant contributions to CC communities. The findings of this study can provide valuable insights into the understanding of the main characteristics and requirements of CC jobs. These findings may offer meaningful implications for CC stakeholders from different aspects. At the institutional level, the findings may help cloud companies to identify qualified CC professionals, and they may help academic institutions meet the need for a qualified CC workforce. At the individual level, the findings may be helpful for CC professionals in measuring and updating their own competencies, for instructors in educating CC candidates in line with emerging demands, and for students in scheduling their career paths. In addition, the methodology of this study can be used in future research to reveal the needs and trends of different IT industries.

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|---|---|
| **Reference Link (if any)** | Applied Sciences \| Free Full-Text \| Career in Cloud Computing: Exploratory Analysis of In-Demand Competency Areas and Skill Sets (mdpi.com) |
| **Provided By** | - *Name of the Institution/Partner that implemented the practice:* Özcan Özyurt , Fatih Gürcan , Gonca Gökçe Menekşe Dalveren, and Mohammad Derawi<br><br>- *Contact of the Institution/Partner (name, email, telephone):*<br><br>Fatih Gurcan (0000-0001-9915-6686) (orcid.org)<br><br>Gonca Gokce Menekse Dalveren (0000-0002-8649-1909) (orcid.org)<br><br>Mohammad Derawi (0000-0003-0448-7613) (orcid.org)<br><br>- *Name of the Strategy/Programme:* Multidisciplinary Digital Publishing Institute (reviwed and published by)<br><br>- *Other useful information (if any):* |
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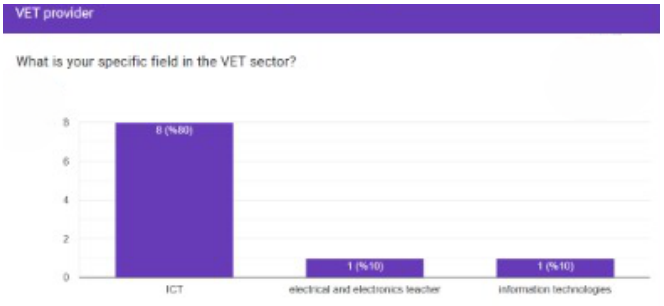
## 2. Field Research

## 2.1. Analysis of Survey Results

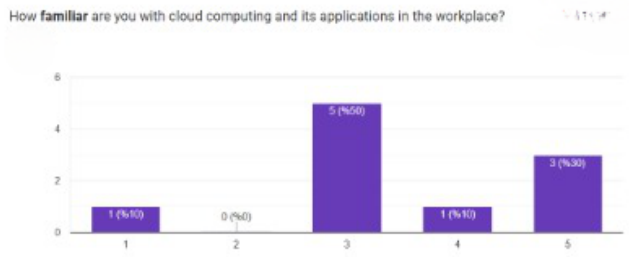
The survey consisted of two parts that focused on two separate target groups; VET providers and VET learners.

The survey was completed by 23 participants in total. VET learners N = 13 (56,5%) and VET providers N = 10 (43.5%).

**VET PROVIDERS**




1- 90% of the VET providers that completed the survey were in the ICT sector.




2- More than % 50 of the participants stated that they are familiar with cloud computing and its applications in the workplace.

3- Responses to this question highlight the gap in education in the cloud computing sector. Just 10 percent of the sample offers any kind of educational path on cloud computing

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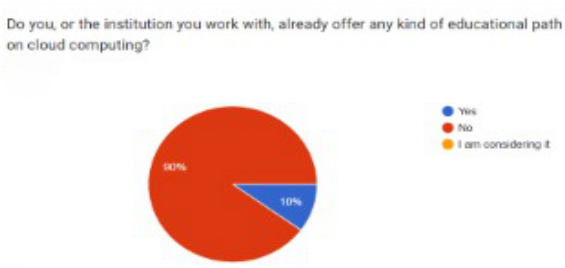
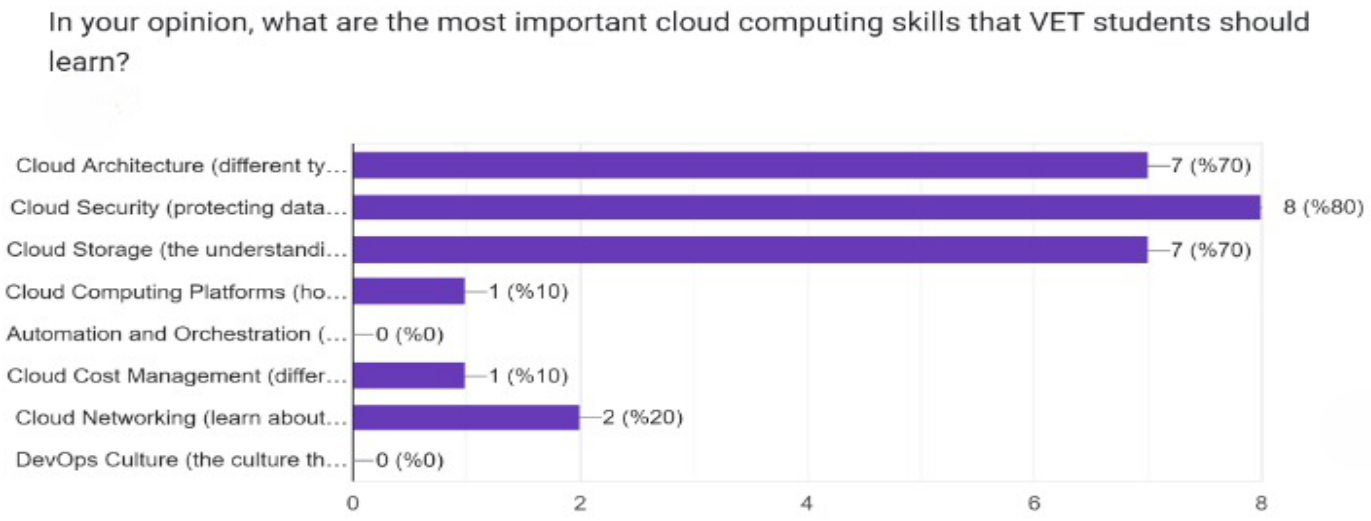



4- Because of the low percentage of participants that carry out training, there are no responses to "If you, or the institution you work with, are already carrying any kind of education path on cloud computing, have you encountered any challenges when teaching cloud computing to VET students, and if so, what were they?".

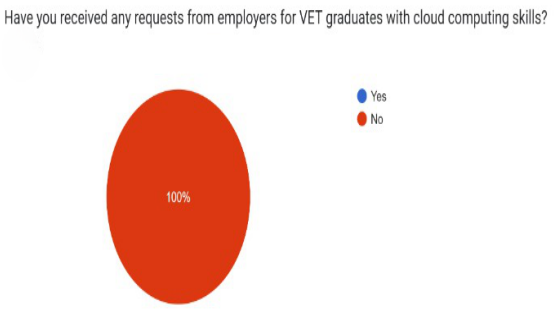
5-The graph shows that VET providers believe that the most important cloud computing skills that VET students should learn are;

1- Cloud Security (protecting data and infrastructure in the cloud)
2- Cloud Architecture (different types of cloud architectures, such as public, private, and hybrid, and the designing of cloud solutions)

Cloud Storage (the understanding of the different types of cloud storage solutions).




6- None of the participants in the sample has not received any requests from employers for VET graduates with cloud computing skills.

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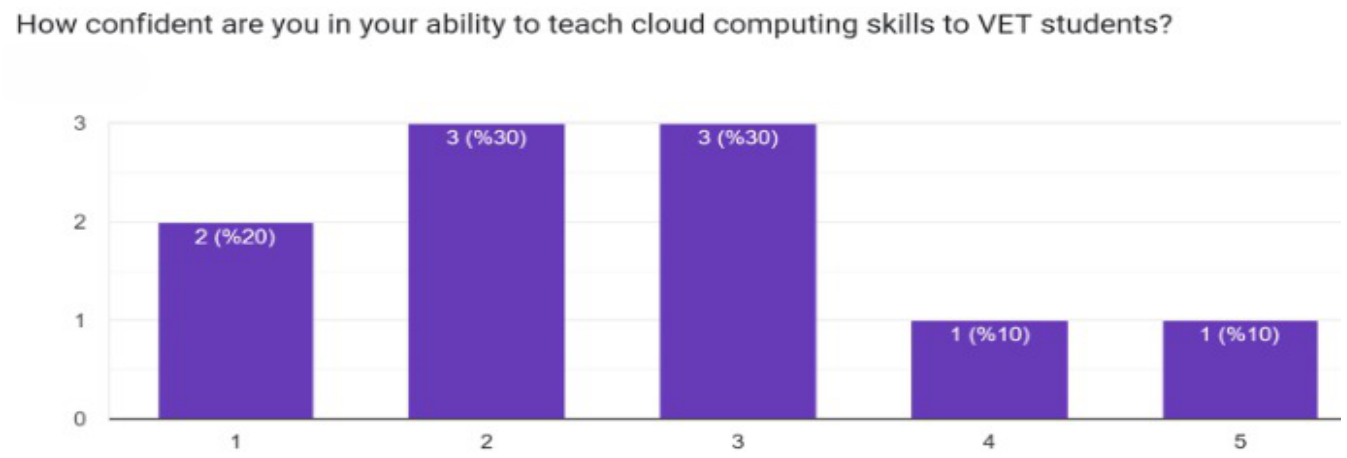
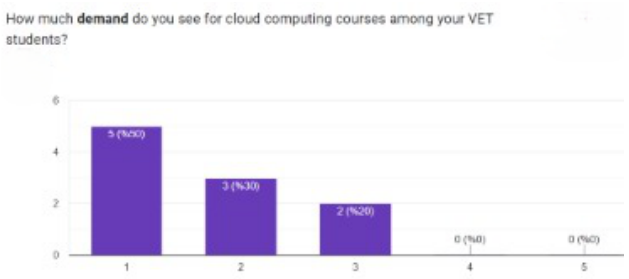
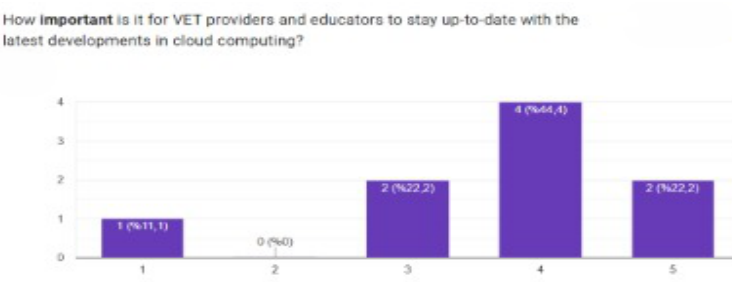
7- The VET providers are mostly **not** confident in their ability to teach cloud computing skills to VET students.




8- There is a poor demand among VET students for cloud computing courses.




9- To stay up-to-date with the latest developments in cloud computing is highly important for VET providers.




10- The VET providers are highly interested in receiving professional development materials or take part in specific educational mobilities on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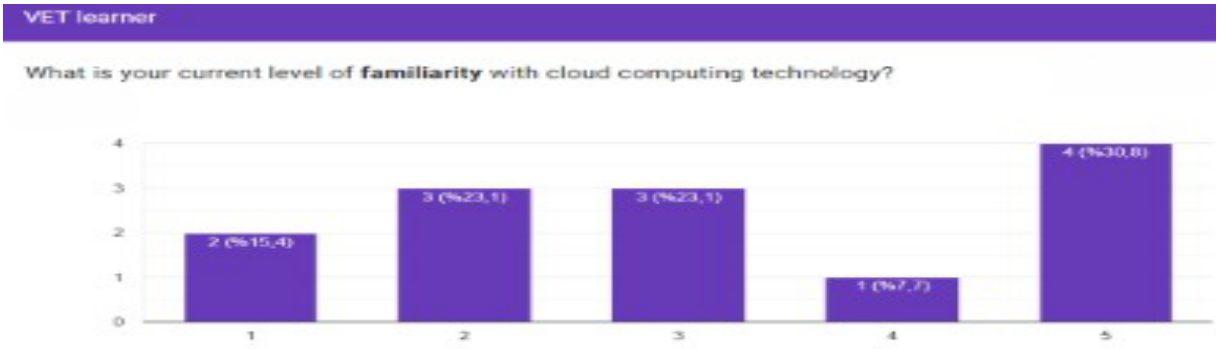
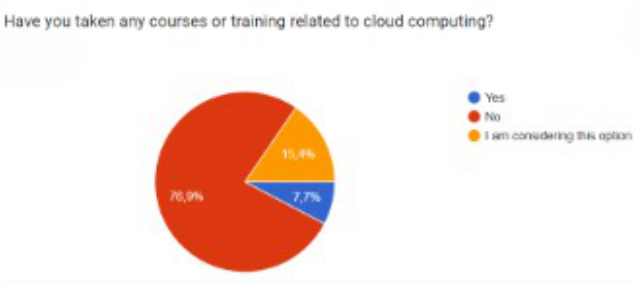
cloud computing to strengthen their teaching skills.

**VET LEARNERS**

11- Replies to this question showed that current level of **familiarity** with cloud computing technology of VET learners are inconsistent, it might be resulted from the gap in education in cloud computing at formal education.




12-The number of VET learners that took any courses or training related to cloud computing is very low (n = 1); about 77 percent of the sample has not received any courses or training, and 15 percent of the sample is considering taking a course or training.

13- One participant who took a training/ course about cloud computing was provided with it by public institutions and

14- Participants possessed the Level 3: Ability to implement cloud computing solutions after the course.


15- VET learners think cloud computing skills are important for their future career at different levels.

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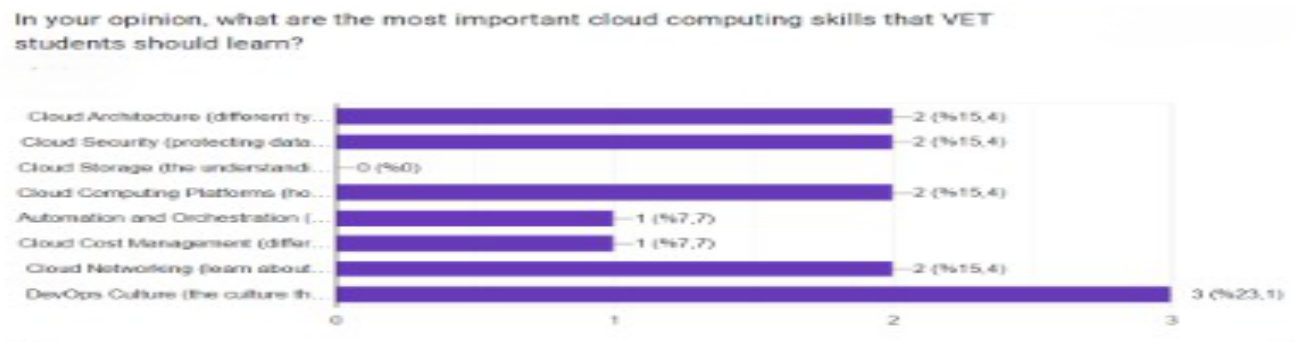
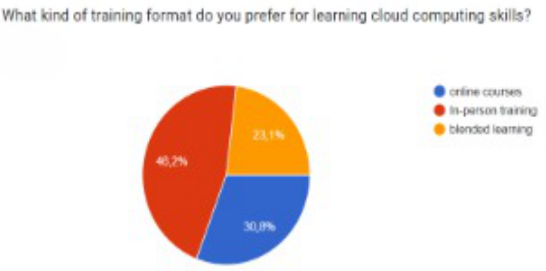
16- VET learners' opinions on the most important cloud computing skills that VET students should learn varies.
DevOps Culture (the culture that emphasizes collaboration between developers and operations teams to improve software development and deployment) is the most chosen one while The Cloud Storage (the understanding of the different types of cloud storage solutions) is not a preferred skill.




17- Replies to "What kind of training format do you prefer for learning cloud computing skills" showed that In- person training is the most preferred one, online course is the second one and blended learning is the least preferred one.




18-VET learners are not highly confident in their ability to use cloud-based software and services. They have an average level of confidence.

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19- The VET learners have not the strongest motivation to receive professional development materials or take part in specific educational mobilities on cloud computing, they have an average level of interest.


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## 2.2. Analysis of Focus Group Study

## FOCUS GROUP REPORT (05.04.2023- İznik/Bursa)

### 1. Introduction

This focus group was held under the desk research of the "Up-skilling the VET sector to Cloud Computing" Project with aim of to defining and understanding the state-of-the-art regarding the specific sector of Cloud Computing in partner countries, analyze the specific needs and gaps in the sector, and assess the professional skills needed in the labor market for VET providers. The focus group followed the directions in the research guideline that was elaborated at the beginning of the project.

Topics that was discussed are;

1. General Information about Respondents

2. Information about VET situation on the labor market and the existing education opportunities in the cloud computing sector

3.Challenges/obstacles that VET learners are facing to establish a career in the ICT and cloud computing-related professions

4. Comments and personal opinion

### 2. Participant Demographics

Moderator

Project coordinator of NICEA Culture and Education Association

Participants of the focus group research are;

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- A VET learner in ICT Department (18 years old)
- A VET learner in ICT Department (17 years old)
- A VET learner in Software Development Department (18 years old)
- A department chief of the ICT Department at a public high school and free-lance code programmer
- A VET provider in ICT sector (teacher for 15 years)

**3. Summary of findings with each outcome, including representative quotes, results of yes or no questions, and quantitative data**

Eligibility checklist

| | | YES | NO |
|---|---|---|---|
| 1 | The moderator introduced her/himself | * | |
| 2 | The moderator presented the Project and its objectives | * | |
| 3 | Moderator informed the participants about the objectives and themes of the focus group and how long is it expected to take? | * | |
| 4 | Moderator assured that the data obtained will be used just for research aims. | * | |

Moderator: M, Participants; P1,2,3,4,5

**Outcome 1: There is a demand regarding cloud computing in the labor market in Türkiye.**

- Question asked during focus group and responses from the focus groups

M; What is the current situation of cloud computing in the ICT sector in Turkey? Is it a demanded skill in the sector?

*P1; Cloud computing is a demanded skill in the sector, and because of the lack of skilled professionals, the wages of this job are very high*

In which sectors is it demanded most?

*P1; From health to security all sectors demand cloud computing technology. Cloud computing is a skill, it is not a service, and is getting important day by day, that is why there is a competition in the sector about it.*

*P2; It is expected that in the near future, we will quit using ordinary storage tools and use just the cloud to save space, time and money. Most of the big firms have already started to use this technology.*

M; Is cloud computing a need in İznik (where we live)? For example, are there stakeholders who particularly demand cloud computing?

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P3; No, not yet, because it is a small place and its economy is based on agriculture and tourism so it is not an urgent need in İznik, it is also a problem because we can not find workplaces where our learners can do internship on cloud computing.

**Outcome 2:There is an education/training gap in Türkiye regarding cloud computing in the ICT**

M; Is there a subject/course or training in school curricula about cloud computing?

*P1; No, there is not*

M; Do you think that having cloud computing skills can get you one step ahead of your competitors in the sector?

*P5; Yes, it will surely, because it is the future's technology*

**Outcome 3 :There are not many training opportunities that specifically focus on cloud computing.**

M; What are the current training opportunities about cloud computing in İznik/Bursa or Turkey?If yes, what are they? Are they public or private?

*P2; Cloud computing is not a department at universities, it is an optional lesson. The courses about it are provided by private organizations, also courses about it are provided by [https://www.btkakademi.gov.tr/](https://www.btkakademi.gov.tr/) which is a governmental education network basically focused on ICT and its branches.*

*P4; What is important about cloud computing courses and training is knowing where to begin. Most of the people know just the storage feature of the cloud system, but it's more than storing data, that's why newcomers need to begin with its ABCs. Learners need to be guided.*

M; Do you use cloud computing in your daily life?

*P3; Yes we use it, we use it especially to store the projects that we work on.*

*P1; Each learner is expected to have a cloud account to follow their lessons in the ICT department.*

*P1;Teachers use cloud computing as a teaching and class management tool in the ICT department, they can floor and check learners' through the cloud.*

**Outcome 4 :VET providers and learners are interested in developing their skills**

M; Do you think that you need a course or subject at the schools?

*P3; Yes we need to have.*

*Firstly we need to begin with destroying the idea that cloud computing is just for storage.*

*P5;We always use the cloud to keep the games we play. Also, we play games through the cloud.*

M; Do all of you have a cloud account? Or do you use flash memory cards?

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*P1; We use both now, because it is a transition process, in case of low quality internet connection, we keep very important documents also in flash disk.*

**Outcome 5 :There are several challenges and obstacles that VET learners are facing to establish a career in the ICT and cloud computing-related professions from lack of guidance to lack of communication with the sector.**

What are the challenges and obstacles that VET learners are facing to establish a career in the ICT and cloud computing-related professions?

Both VET providers and learners agreed on the same challenges and obstacles;

- lack of guidance
- lack of technical materials
- lack of workplaces to do internship
- lack of communication with sector

## 3. Implications and Conclusions

The field research data suggests that there is a high demand for cloud computing skills in the ICT sector in Türkiye. This demand is widespread, with cloud computing being sought after in all sectors ranging from health to security. However, there is a significant education/training gap in the sector. Participants noted that cloud computing is not currently included in school curricula and that there are limited training opportunities available. This lack of training opportunities is further exacerbated by the absence of workplaces to do internships, which is crucial for VET learners to gain practical experience and hone their skills.

Despite the lack of formal training opportunities, it was noted that cloud computing is already being used in daily life, both by learners and teachers. Many participants have also identified the need for learners to have a cloud account to follow their lessons in the ICT department, and teachers use cloud computing as a teaching and class management tool.

Several challenges and obstacles were identified by both VET providers and learners that they face in establishing a career in the ICT and cloud computing-related professions. These include the lack of guidance, technical materials, and communication with the sector. Learners need to know where to begin with cloud computing and require guidance to understand that it is more than just data storage. To address these challenges and equip learners with the necessary skills to meet the demands of the sector, VET providers need to work closely with the industry to develop comprehensive training programs that address these challenges and obstacles. This will enable learners to gain practical experience, as well as improve their technical skills and communication with the sector.

In conclusion, the data from Türkiye highlights the need for VET providers to take the necessary steps to provide learners with the required skills to meet the demands of the rapidly developing ICT sector in Türkiye. With the proper training and guidance, VET learners can develop their cloud computing skills, leading to more opportunities and a fulfilling career in the ICT industry.

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