

# **OUTSTANDING TEACHING, LEARNING AND ASSESSMENT TECHNICAL SKILLS NATIONAL PROGRAMME**

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# PROJECT OVERVIEW

This project is about developing a cost effective and sustainable model of involving industry experts in classroom delivery. The project focuses on the digital technical route but once developed the model will be applicable to other technical routes.

Through the project partnership, industry experts will be provided with professional development for pedagogy and these industry partners will exchange current vocational practice and knowledge requirements with STEM teaching practitioners. We are calling these industry experts Master Technicians as they will be sharing specialist skills, techniques and industry knowledge with teachers and students. This will clearly be of benefit to learners and will lead to further improvements in teaching, learning and assessment.

One outcome of the project will be the creation of a Further Education Teaching Hub where teachers and industry experts can collaborate, share knowledge and experience, create resources and engage with industrial and pedagogic professional development training.

Further outcomes will include:

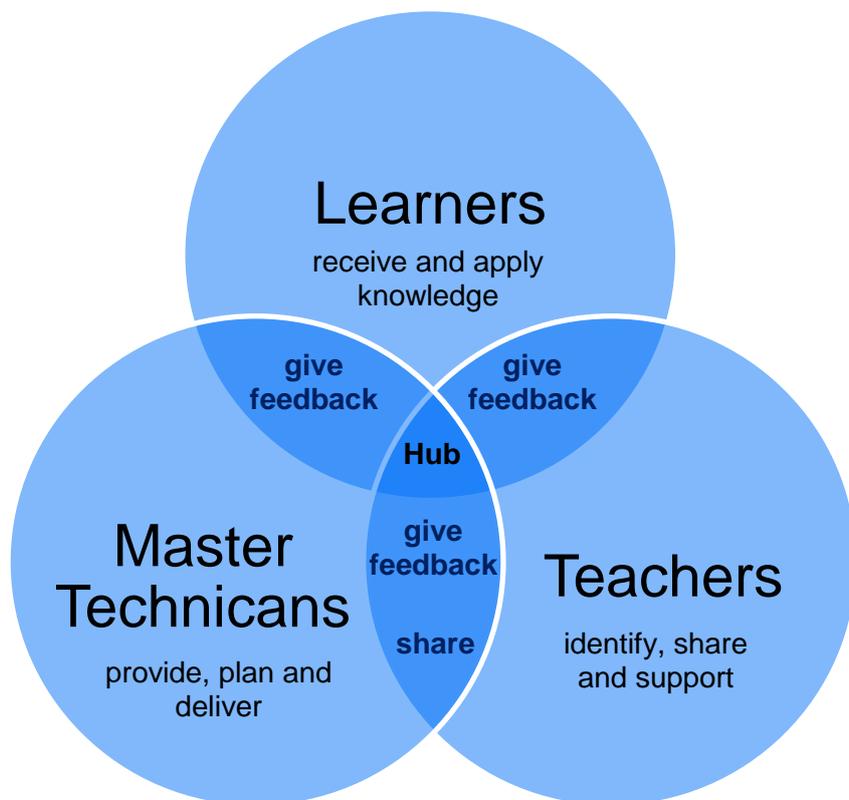
- Improved curriculum designed to meet industry needs,
- An online pedagogic training module to support the industry experts, known as MTs (Master Technicians) in this project,
- Direct involvement of industry experts in the delivery of sessions to learners.



## Project Aims

- Encourage greater collaboration between education providers and industry experts to develop outstanding teaching, learning and assessment on technical route training.
- Create sustainable partnerships with other education providers to share strategies, challenges and opportunities to involve industry experts in the delivery of technical route training.
- Create best practice solutions for supporting industry experts to ensure they are confident in classroom delivery situations and that this delivery develops outstanding teaching, learning and assessment on technical route training.
- Deliver pedagogic training within the partnership to support industry experts and promote joint working between academic staff and industry experts.
- To create a Further Education STEM Teaching Hub as a centre of excellence for collaboration between industry experts and academic staff.

**Illustration showing the collaborative relationship between the partners, learners, teachers and MTs centred around the FE STEM Teaching Hub (currently hosted by project lead Conel, the Hub is a VLE for sharing essential information).**



## Methods

The use of questionnaires for the project partners and participants addressed and captured pre-project responses from learners, teachers and Master Technicians and post-MT teaching session reflections from learners, teachers and Master Technicians.

Questions were designed to give quantitative and qualitative data using Survey Monkey, we limited the surveys to a maximum of 15 questions (for practical reasons) making each question conditional to minimise questions being 'skipped' contributing to rich sources of data.

Semi-structured interviews of teachers, learners and MTs were audio and video recorded by us and our partners. The interviews and questionnaires provided valuable sources of empirical data however the process of transcribing and analysing data is a time consuming process.

**Learner initial survey** 342 responses via 6 providers

**Learner MT survey 1** 141 responses via 4 providers

**Learner MT survey 2** 123 responses via 5 providers

**Teacher Initial Survey** 26 responses via 6 providers

**Teacher post MT session 1 survey** 9 responses via 4 providers

**Teacher post MT session 2 survey** 8 responses via 4 providers

**MT initial survey** 16 responses

**MT Post training day survey** 15 responses

**MT Session 1 survey** 8 responses

**MT Session 2 survey** 8 responses

## Positive Outcomes

- **Initial learner feedback** indicates that the use of industry experts to deliver teaching sessions would be welcomed by almost all learners. In a survey across partner education providers, 87% of learners indicated that the use of such experts would teach them new skills and 68% indicated that the use of industry experts would inspire them.
- **Initial teacher feedback** across all partner education providers is very positive for the partnership arrangements with industry experts. A survey conducted with 26 teachers indicated that 85% would hope to have access to and update current resources and 65% of teachers did not have the opportunity to regularly collaborate with industry.
- **Employer feedback** on the support provided through the pedagogic training day has been very positive, with results demonstrating that high level of confidence has increased by 100%. Previously 50% of employers had not received training for instructing others.
- **Following the MT sessions learner feedback** indicates 74% felt they had learnt a new skill and 97% would be interested in further MT sessions.
- **Following the MT sessions teacher feedback** indicates all felt they had gained new knowledge or skill. In the same survey 89% felt the MT inspired, motivated and raised the aspirations of the learners with their enthusiasm and knowledge.
- **Following the first MT session the employers' feedback** indicated that 100% enjoyed teaching their first session and they reflected on the strengths and weaknesses adapting their delivery style or resources for their second MT session.



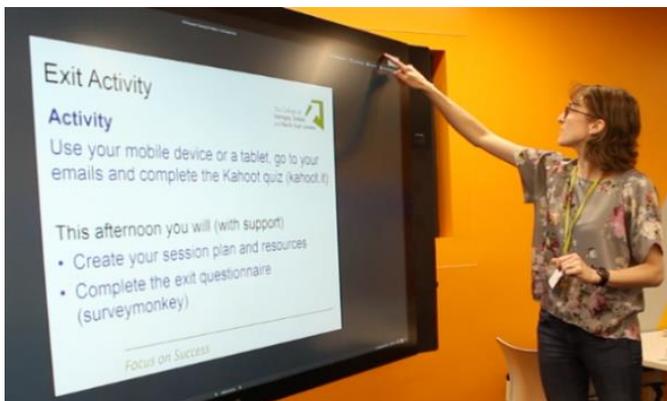
“Tech is always evolving so I constantly need to update skills ”

“Types of kit, up to date developments in post-production ”

“Current industry standards, e.g. in-demand programming languages (Java, C#), No-SQL database technology, new development toolsets (e.g. AngularJS), and project management methodologies (e.g. Agile)”

“Working with mobile music technology in performance”  
**TEACHER FEEDBACK ON WHAT CPD THEY NEED TO KEEP UP WITH INDUSTRY**

## Pedagogic training day for industry experts



“The power of hands-on, task-based learning over lecture-style learning, the importance of group dynamics (e.g. feedback in pairs)”

“Not to lecture at students but involve them with practical learning exercises”

“Making sure learners stay engaged by varying the session and involving regular team and individual activities”

### EMPLOYER FEEDBACK ON LEARNING AT PEDAGOGIC TRAINING DAY



“I thought it was a fantastic session today, it's given ideas way beyond just a PowerPoint presentation, in ways to be able to present to the students either through quizzes or scenarios, or whichever it may be, to break up the session so it's more interesting and more interactive and hopefully has the desired effect from a learning perspective”

“It's made me reflect a bit on what I do and maybe just some extra things in to reinforce some of the aims that maybe the people who employ me have. It's made me think about tailoring what I do to the specifics of what I've been asked to do by an employer”

### EMPLOYER FEEDBACK ON LEARNING AT PEDAGOGIC TRAINING DAY

# TABLES

Initial learner survey (Tick all that apply, add comments)

**ANSWER OPTIONS**      **RESPONSE PERCENT**      **RESPONSE COUNT**

**What would you hope to gain from this (industry expert teaching session)?**

Link theory to practice	44.4%	152
I'll have access to new resources	49.1%	168
That I will be more employable	53.8%	184
My confidence will be increased	57.3%	196
Inspire me	67.8%	232
Have more knowledge about job roles and how they link	75.4%	258
Teach me new skills	87.4%	299



"I think the session gave me a lot of perspective and it motivated me a lot and it made me think about a career in cyber security which is not something that I'd done before and I think if we were to have more Master Technicians it would give me even more insight into different sectors within the IT industry"

**LEARNER FEEDBACK FROM VIDEO INTERVIEW**



"Experimenting"

"It's very hands on, allowing you to practice what you are being taught instantly"

"About seeing a different point of view on the subject matter"

"The industry knowledge the individual had to offer, making for a possible career option within the sector"

"Using my technical skills to make an actually feasible IoT solution for Industry"

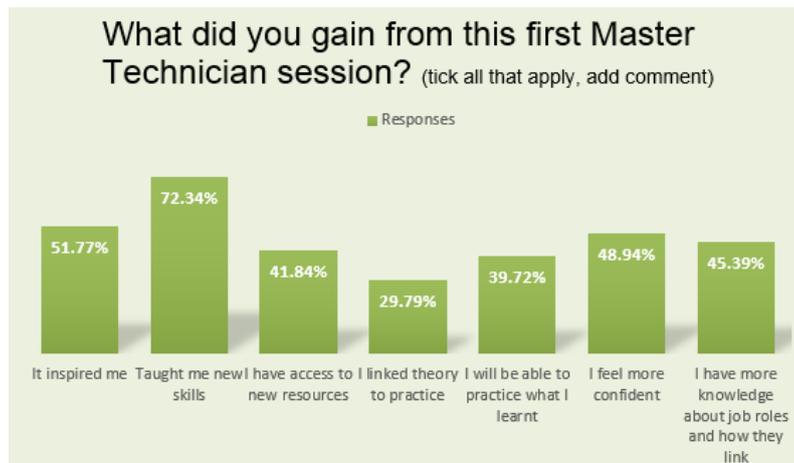
"Using new equipment"

"Increased understanding of cybersecurity"

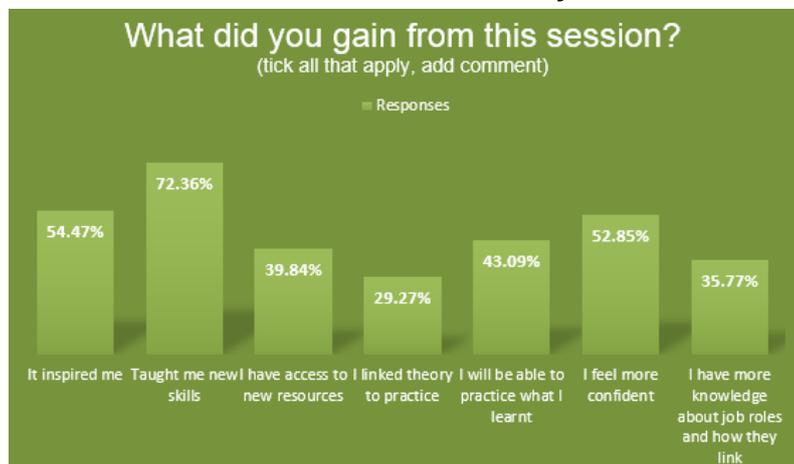
"Technical explanation and definition of the subject"

**LEARNER FEEDBACK ON WHAT THEY ENJOYED ABOUT THE MT SESSIONS**

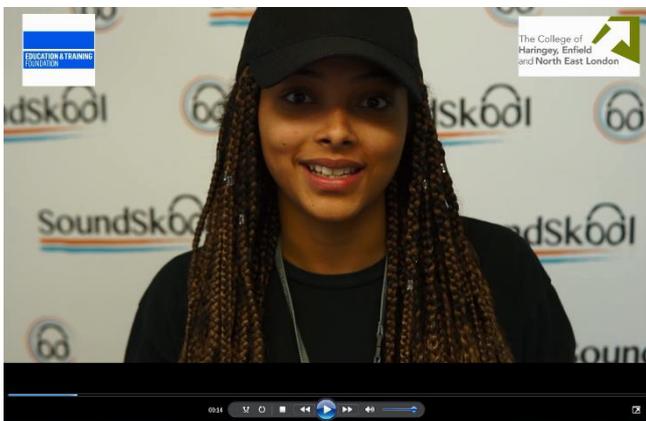
**Learner feedback MT session 1 survey**



**Learner feedback MT session 2 survey**



## Images from learner interviews



“

“The current problems the industry is having such as the recent hack on the WAP encryption system for Wi-Fi so now that Wi-Fi is not secure, what steps we could take to protect ourselves from it and he would give us industry standards, like what people are currently doing to tackle problems like that.”

“We have more resources about what we are going to do for university and some of the students now know what they want to do at university, as well, from the two sessions.”

### **CONEL LEARNERS’ FEEDBACK ON WHAT THEY ENJOYED ABOUT THE MT SESSIONS**

“

“It was amazing to have someone come in from industry and show us what real life industry is. Now I can use Ableton Push in my performances as I’m a vocalist”

“I’m believe going to use it in live shows because he came in and taught me I’m able to do it myself and put what he did into practice”

### **SOUNDSKOOL LEARNERS’ FEEDBACK ON WHAT THEY ENJOYED ABOUT THE MT SESSIONS**

## Initial teacher survey

Tick all that apply, add comments

ANSWER OPTIONS	RESPONSE PERCENT	RESPONSE COUNT
<b>What would you hope to gain from this partnership?</b>		
Inspire my teaching	73.1%	19
I'll explore new units	50.0%	13
I'll have access to new resources	84.6%	22
I'll update current resources	84.6%	22
Promote richer discussions with my learners	69.2%	18
My confidence will be increased	53.9%	14
It will be easier to remain current	65.4%	17



"It would be nice to learn something genuinely useful and practical for my learners."

"I love enriching CPD - as a teacher/manager this is my main area for learning and adapting new techniques in the classroom"

### TEACHER FEEDBACK FROM INITIAL SURVEY



"Specific knowledge on latest industry applications "

"Industry knowledge and application in the work place. Gained greater insight which will improve my materials and delivery "

"Useful and helpful professional techniques which were easy to understand and implement"

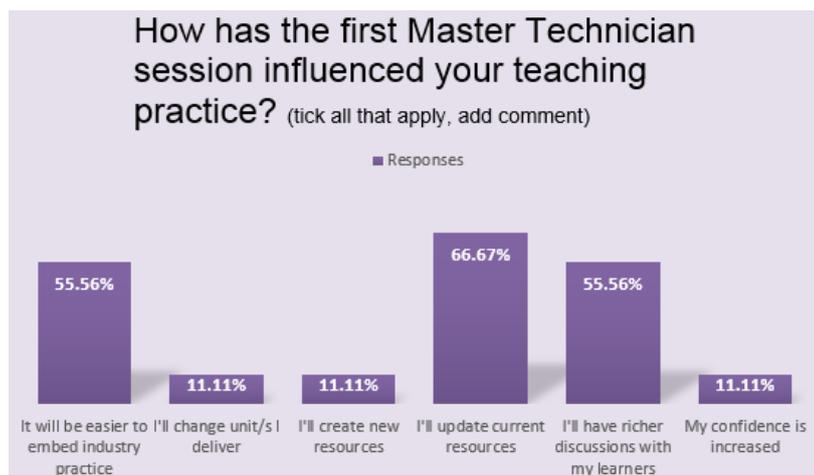
"The industry knowledge the individual had to offer, making for a possible career option within the sector"

"Using new equipment"

"Increased understanding of cybersecurity"

### TEACHER FEEDBACK ON WHAT THEY GAINED FROM THE MT SESSIONS

## Teacher feedback MT session 1 survey



## Teacher feedback MT session 2 survey



### Industry expert post-training survey

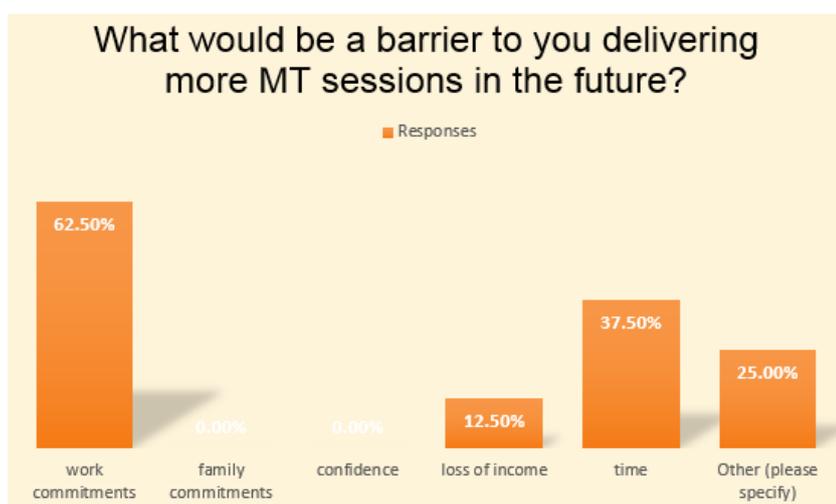
At the start of this session how confident were you with planning and delivering a session to students?

1=Not confident	2=Quite confident	3=Very confident	Response count
5	6	4	15

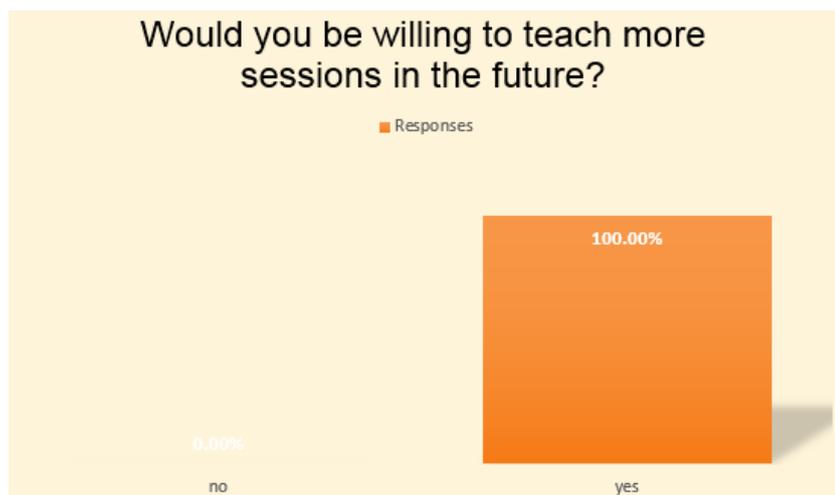
How confident are you now with planning and delivering a session to students?

1=Not confident	2=Quite confident	3=Very confident	Response count
1	6	8	15

### MT reflection survey following their second teaching session



Other (please specify): None at present, none



“Really enjoyed the experience. The financial assistance made it possible. Thanks”

“I was very pleased to be able to participate in the MT programme, it felt very worthwhile for the students and for me. I learnt a lot from the very well organised training session and the teaching itself. I hope it will continue so that other students can get this opportunity to taste real-world roles they might pursue in the future”

#### EMPLOYER FEEDBACK AFTER DELIVERING THEIR MT SESSIONS



“Teaching is something I’m interested in doing later on, after I’ve worked in industry for a while because it will break me down at some point! At the same time, I like seeing all the creative energy in young people, inspiring them to reach their potential. Their energy can always come back into you and inspire you as well, I kind of like that cycle!”

#### EMPLOYER FEEDBACK AFTER DELIVERING THEIR MT SESSIONS

## Lessons learnt

The project started with a tight deadline ambitious within the context of the time of year and staff workload and commitment. The project leads found the management of the project took an extensive amount of time with no remission from daily work responsibilities. Between May and November 600+ emails were sent or received, in retrospect a bigger team to share the administrative tasks would have provided some relief.

Questionnaires were used as project partners and participants were based on multiple sites but chasing non-compliance due to 'survey overload' was time consuming and we hadn't planned for the ETF and AoC surveys too. Some of the surveys were anonymous but this made tracking more difficult so we created a spreadsheet to help monitor completion progress.

Data collection methods used		
Questionnaires via SurveyMonkey/email	Audio interviews	Video interviews
16	7	11

The OTLA FE STEM Teaching Hub (Moodle, VLE) was created to be a repository for key project documents to facilitate collaboration and enable the sharing of resources. A completion tracking block was used to automatically monitor participant access to resources. There are currently 74 participants enrolled, 24% accessed the resources and of those 50% accessed the monthly reports and case studies. We have will be giving access to all Phase 1 and Phase 2 participants from the AoC/ETF dissemination event on 5<sup>th</sup> December (an additional 33 participants) taking total hub participants to 107. The MTs and teachers collaborated directly facilitating the foundations for a stronger relationship between industry and the curriculum.

## Images of OTLA FE STEM Teaching Hub with resources

The collage displays a variety of project materials, including logos of partner organizations such as City and Haringey College, SoundSkool, BVJ, and free2learn. It also features a '2017' graphic and a central document titled 'FE STEM Teaching Hub Project Training Pack for Master Technicians' funded by the ETF. The bottom section shows a document titled 'Outstanding Teaching, Learning and Assessment FE STEM Teaching Hub project' by Torcato Coutinho, dated 26<sup>th</sup> April 2017, with a 'Focus on Success' logo.



“Working with an industry specialist who occupies a significant position as workshop manager for a prestigious company like Cartier was very inspirational to the students.

The tips and advice the specialist provided the students were tested and tried methods which were derived from real life situations straight from the workplace, making them therefore very relevant to students wishing to enter the industry.

In addition to their specialist knowledge and their ability to contextualise the learning materials, the fact students can share they attended a workshop with the workshop manager from Cartier also provides the students with an added benefit when including the tuition on their resume.

For teaching staff, sharing teaching content and their teaching strategies with the specialist was also beneficial giving them the opportunity to discuss additional opportunities to increase workplace relevant advice and guidance.

## PROVIDER FEEDBACK ON THE IMPACT OF THE PROJECT

## Conclusion - Outcomes towards OTLA

### Impact on learners

There are clear links between the Master Technician sessions that ran and the positive influence the sessions have had on the learners, over 74% felt they had gained new skills, 53% felt inspired and 49% indicated their confidence had increased. 141 learners (86.5%) indicated they were more aware of current practices in industry following their first experience of an MT session.

One teacher explained an MT gave the students self-assessment sheets before and after the MT session he states, 'They had the opportunity to contrast and compare and they found they had learned a lot more; they could write a lot more about the subject than they started with. It was a form of assessment but a good form of assessment because it provided me with feedback as a teacher as exactly where their knowledge had increased.'

### Impact on teachers

Teachers feedback indicates 54% felt their confidence has increased, 67% have started updating resources and 56% felt it will be easier to embed industry and have richer discussions with their learners. Teachers surveys and interviews indicate they have gained new knowledge and skills from being in the MT sessions and this has facilitated the creation of new or updated resources one teacher stated, 'I updated my resources, the very following lesson I had was on these (*cyber security*) threats organisations have so I looked at his materials, looked at the examples, included some of them and extended on the statistics and that really helped'.

### Impact on employers

All employers indicated they value imparting their knowledge and experience to learners and teachers. To ensure smoother planning the curriculum lead should inform the industry expert of the learner course type before the expert completes the Master Technician Training Module. Of the 15 industry experts who participated in the project 56% (9) were employed and 44% (7) were freelance.

The majority of MTs enjoyed the Training Day but two commented that they would have preferred the day to be shorter, although these were MTs who had previous experience of delivering sessions to students. It exceeded our expectations for how much the MTs gained from attending the training days and from delivering their MT sessions. Surveys indicate an increase in their confidence and skills which have also supported them in their professional roles.

### Impact on providers

All providers involved in this project reported increased teacher and learner confidence. Two partners have installed new software for their Master Technician sessions. One MT gave learners and teachers free access to industry online training materials, the learners and teachers are continuing to access and use this resource.

Another provider invested in tools to enable their students to continue developing their skills by practicing current industry techniques.



"The OTLA was a great opportunity to really embed an industry practitioner into the curriculum of our college. The training and funding made a real difference to delivery. It was well prepared and of a high standard as a result"

"Learners really enjoyed the experience and appreciated having the opportunity to get an insight into the world of work"

"The teachers are more confident about working effectively with industry practitioners"

The level of commitment and expertise shown by the MT's was refreshing and staff were willing to support and take part.

Our technician spent a good 45 minutes with Aron talking through the amazing kit he brought"

### PROVIDER FEEDBACK ON THE IMPACT OF THE PROJECT

## Sustainability

A project outcome is the creation of a model to be used as a framework for providers who want to promote the use of MTs in the classroom. This is a sustainable way for providers to collaborate with industry to better meet the needs of employers, learners and teachers whilst responding to the requirements of the technical pathways via the Skills Plan.

Increasing the collaboration between curriculum and industry is one way providers can prepare for the T levels.

Teaching staff can be upskilled through MT collaboration and learners will also gain current industry knowledge and skills to improve their vocational development and communication with employers.

The engagement with industry and employers can lay the foundations for work experience placements, work experience being a key requirement for full certification of a T level. Employers could benefit from having students with current industry skills and knowledge contributing to the workplace.

The model is transferable to other pathways and can be used with the Master Technician Training Resources and Master Technician Training Module which have been designed to be generic to teaching and applicable to sessions delivered by any industry expert.

Employers indicated a willingness to continue to teach MT sessions and loss of income would be a factor in preventing 25% from committing to this regularly. Our suggestion for funding is one way a college could commit to supporting MT sessions regularly through business planning.

## Funding

There are a number of considerations and decisions that need to be made at senior level if the implementation of the Master Technician model is to be successful. This has to be **cost-neutral** as much as practically possible and identified and implemented during the business planning phase. The cost of training MTs also needs to be taken into account and added to the overall cost of delivery.

In this project MTs were paid £300 (this amount should be adjusted to geographic location and sector) to attend a day's training on the basics of pedagogy. This was considered to be a reasonable pay rate for a mutually beneficial day. For colleges, it is a good opportunity to develop a closer relationship with the employer/master technicians and get their greater commitment for the longer term. For MTs this is also beneficial as they develop teaching skills which can also be transferable to the workplace.

In this project Master Technicians were paid £500 for a day, which seemed to be about right for the 'digital' sector. However, the rate should be adjusted according to the sector and geographic location.

As an example, a typical full time, level 3 qualification of 540 guided learning hours (GLH), will have 11.5 hours vocational core delivery per week over a period of 37 weeks equating to 414 hours overall. If MTs deliver 10% of the programme this would incur a cost of 6 MT days or 42 hours. This would be offset by the fact that teachers would not be necessary to deliver these hours. It is recommended however, that



"The OTLA sessions had a great impact on our provision, giving learners a valuable insight into current working practices in music production. Learners were introduced to state of the art technology and tools that were of great value to their vocational development"

"We plan to develop these tools we're been shown to incorporate into the provision for next year and as a result, ensure our vocational provision is up to date with current industry standards"

### PARTNER FEEDBACK ON ACTIONS FOR CONTINUING THE PROJECT

teachers would be part of the first MT session to monitor learners, support the MT if required and gain valuable CPD.

### Cost of MT delivery

Qualification	Level	Total GLH	Core vocational hours per week	Total vocational hours delivery	10% of vocational hours delivery	Total no. of MT days required	Rate of pay Per day	One off training session	Total cost of MT delivery
Full time	3	540	11.5	414	42	6	£500	£300	£3,300
Full time	2	450	9	324	33	5	£500	£300	£2,800

### Module

To enable effective sharing of the training resources from the Master Technician Training Day we commissioned a module that can be completed online or offline. It includes the workbook used on the Master Technician Training Days, a PowerPoint session template and 2 feedback questionnaires for collating teacher and student feedback. The aim is for the Master Technician Module to be used by a training provider with their industry expert. The module can be completed independently by the industry expert as planning preparation for their session although the richness of face to face interaction is recommended and should be supported if possible.

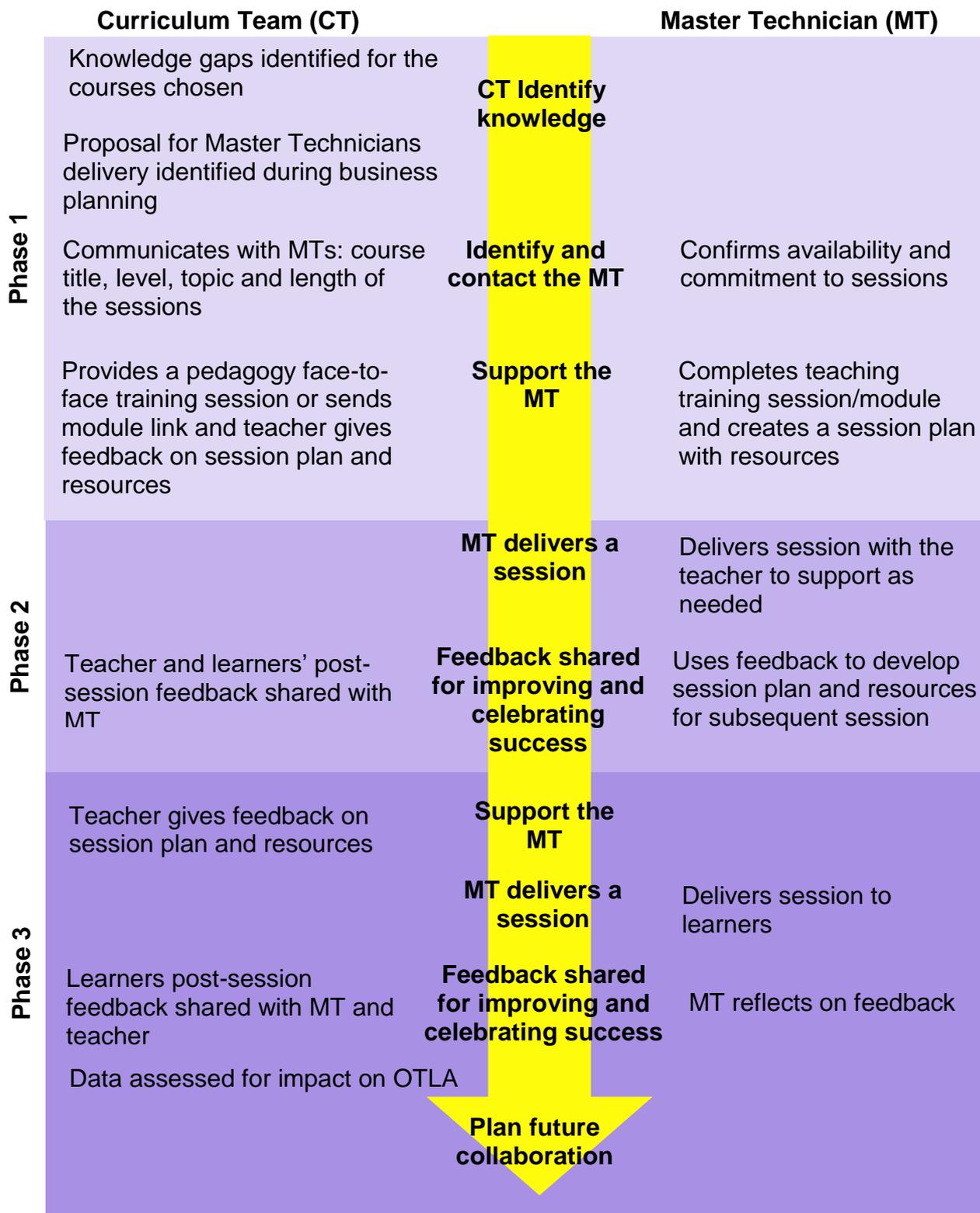


“BAJ will review its other working relationship and see how we can introduce more sessions delivered by industry specialist”

“Even though our teaching team already consists of several industry experts, the experience of the industry expert working for Cartier, a renowned brand, supports the BAJ effort in creating valuable industry connections which learners could utilize, either to build experience on their resume or to build working relationships after graduation”

#### PARTNER FEEDBACK ON ACTIONS FOR CONTINUING THE PROJECT

# 1. Model for collaboration between the Curriculum Team (heads/managers/teachers) and the Master Technicians



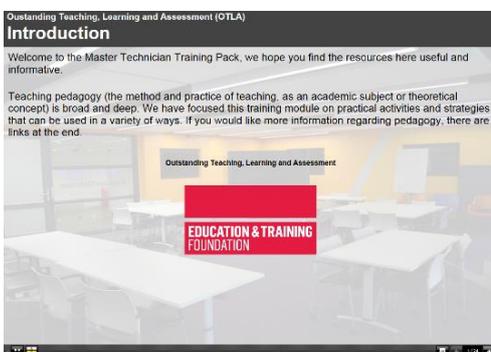
**MTs invited to participate in curriculum reviews to identify where industry practices could be enhanced / MTs could co-write assignments and collaborate on live projects/briefs.**

## Key steps for Master Technicians and Teachers taking part in the project

- Curriculum staff identify possible knowledge gaps in the curriculum for the courses chosen to take part in the project
- Colleges identify employers/Master Technicians
- Curriculum agrees dates and courses / groups for delivery with MTs
- Master Technicians attend training or complete online module
- Curriculum staff share knowledge gaps with Master Technicians (MTs) and advise them on what they would like them to deliver
- MTs plan sessions and possible resources and share them with curriculum staff who will feedback to and support MTs with planning and resources available
- MTs deliver a session with teacher present (CPD)
- At the end of the session the Teacher and the Learners provide feedback on the session
- Curriculum staff and MTs reflect on feedback and act on it (whenever necessary) and agree on the content of the following sessions to be delivered
- MTs plan sessions and possible resources and share them with curriculum staff who will feedback to and support MTs with planning and resources
- MTs deliver further sessions
- At the end of the session the Learners provide feedback on the session
- Feedback is a shared with the MT and the teachers
- Colleges invite MTs to participate in curriculum reviews to identify where industry practices could be enhanced / MTs could co-write assignments and collaborate on live projects/briefs

## 2. The OTLA Training Module

The module is based our project OTLA Master Technician Training Days. The original workbook is included with the module along with a PowerPoint session template and two surveys that can be used by a provider or MT for gathering teacher and learner feedback.



The online module can be found at <https://vle.conel.ac.uk/lo/otla>

The offline module can be found at [https://vle.conel.ac.uk/LO/OTLA\\_offline.zip](https://vle.conel.ac.uk/LO/OTLA_offline.zip)

To use the offline version, it needs to be unzipped into a folder then double click on the index file.

## 3. Takeaway Message

Facilitating the upskilling of teachers through Master Technician collaboration enabled the learners to gain industry knowledge and skills,

improved their vocational skills development and provided them opportunities to engage with employers. The relationship wasn't all one-way, transferable pedagogic support and training was given to the Master Technicians so they could plan and deliver engaging sessions to the learners but also apply these skills to their professional roles. The Master Technicians, teachers and learners reported an increase in their confidence. The project model and resources are transferable to other sectors.