Pedagogy first: realising technology enhanced learning by focusing on teaching practice

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Abstract

This paper explores a 'pedagogy first' approach to technology enhanced learning developed by Sheffield Hallam University (SHU) as a method to encourage use of, and experimentation with, technology within teaching practice and to promote the mainstreaming of innovative practice. Through a consultative approach where all staff members were invited to contribute, SHU has created a Teaching Approaches Menu that reflects practice at the institution and can be used to explore teaching practice and appropriate supporting technology either by individuals or as part of a facilitated discussion. Background to the project is provided, along with the design philosophy and approach, including a brief review of other frameworks. The Teaching Approaches Menu is introduced, its development outlined, and some initial feedback is presented.

Introduction

The potential for technology to support and enhance learning has been well stated (Salmon, 2002; Ruiz, Mintzer, and Leipzig, 2006), however the reality has been that, in general, it has not fulfilled its promise to transform learning and teaching practice (Jenkins, Browne, Walker and Hewitt, 2011). While tools such as Virtual Learning Environments (VLEs) are ubiquitous within UK higher education, they are rarely used to their full potential and, as a result, may have little impact on learning (Demian and Morrice, 2012). In other cases, technology has been used primarily to replicate existing practices, such as electronic whiteboards and data projectors being used to show what are essentially static acetate slides. Puentedura's (2010) 'Substitution Augmentation Modification Redefinition' (SAMR) model (Fig. 1) suggests that this replacement of one tool with a more advanced or feature-rich one is the initial step toward using technology to transform teaching into an active, participatory experience. However, the process often appears to stall at this point and the disruptive potential of many technologies is never realised in wide-spread practice.

Figure 1. Puentedura's SAMR model (2010, p.3)

Where technology is being used in transformative ways, it is frequently by a small minority of innovators who are enthused by technology, accept its value, and have a strong desire to enhance their students' learning (Jenkins, et al.,

2011; Sørebø, Halvari, Gulli and Kristiansen, 2009). While these innovators are essential for driving the cutting edge of practice, their impact on the wider culture of teaching and learning is often highly limited due to being subsumed by larger forces within institutions, such as departmental culture, inertia and restistance to change, funding issues, and lack of management support (Schneckenberg, 2009). The major challenge for those involved in Technology Enhanced Learning (TEL) initiatives is in encouraging and supporting this innovative practice to become standard practice. Yet Koehler and Mishra's (2009) 'Technological Pedagogical Content Knowledge' (TPACK) model emphasises that a deep understanding of how technology can be used to enhance their students' learning is as essential for teachers as knowledge of their subject area and different pedagogical approaches. From the literature it becomes clear that, for technology enhanced learning to have a wide-spread impact, teachers must be fully engaged in its use, and that using their existing practice as the engine of change could be key.

This paper outlines a project intended to support the mainstreaming of innovative, engaging, well-integrated TEL practices by focusing on pedagogy rather than technology. It begins by providing some context to the need for such a project and outlines the design considerations and relation to existing resources in this domain. It continues with an overview of the development process of the project and its impact within the institution, followed by some future directions for the project and information for others interested in making use of the generated resources or the approach taken.

Background

TEL has been highly visible within the curriculum at Sheffield Hallam University (SHU since Blackboard was introduced as the institutional VLE in 2000. The implementation strategy used was "bottom up" rather than "top down", meaning that it was necessary to find ways to make teaching staff want to use the VLE and understand the ways in which it could enhance the teaching and learning experience. This strategy was largely successful - within 5 years over 90% of modules had a Blackboard site, and while addressing the remaining 10% is relatively straightforward, a consistent challenge in subsequent years has been staff willingness and ability to use the VLE to its full potential.

Pedagogy before technology has always been the ethos behind TEL support and direction at SHU, and it was this approach that contributed to the success of the bottom up strategy for the implementation of the VLE. Similarly, other TEL projects have found the most success when using this approach, as we find teaching staff respond best when they have the opportunity to be involved. Consequently, endeavours to engage staff in good practice TEL have revolved around this stance. Further supporting this approach is that projects that have focused on technology had little impact beyond the core of innovators - echoing the findings of Jenkins et al., (2011) and Sørebø et al., (2009).

In 2012, the step was taken to develop and introduce a set of minimum expectations for the use of the VLE that would provide, at a minimum, a consistent VLE experience for students and further embed Blackboard as the core of each teaching module. However, these expectations focused on the more administrative and communications aspects of the VLE, rather than on the pedagogic application of the tool. What remained was a need and desire to enable teaching staff to move to the next level and continue to innovate in their practice - not for the sake of it, but to meet student and external expectations. At the same time, staff interest in tools not provided by the institution, particularly social media and "web 2.0", was growing and a method of highlighting the potential applications of these additional tools was required.

Design Philosophy

Previous projects at the institution have shown that, while the majority of staff are comfortable with the key pedagogical theories relevant to their own discipline, engagement with curriculum development initiatives is higher when the process and resources are grounded in the practical. For example, an initiative to introduce a modified version of the 'Viewpoints' curriculum design toolkit (O'Donnell, Masson, Ross, Virapen and Harrison, 2012) had a reduced impact due to some staff members viewing it as something from outside the institution that was being imposed upon them and an implied criticism of practice by others. As a result, the project team made the decision from the outset that the project should focus on providing resources and development opportunities to offer inspiration, drawing primarily from existing innovative practice at the university. The experiences of the project team in implementing TEL and pedagogical change projects at the institution resulted in three elements being identified as essential to the project achieving a significant impact:

- examples should be locally focused
- development should follow a consultative approach
- resources should be non-prescriptive

Locally Focused

While it would be relatively easy to draw upon information and examples from outside the institution, one of the aims of the project was to raise the profile of engaging, effective and innovative practice that was happening locally - much of which was unknown outside of the specific academic department or subject group. To this end, it was essential that the project situate the information within the context of the institution, while making it accessible to people from a wide variety of disciplines and subject areas.

Consultative Approach

The intention of the project was to bring about changes in culture and practice at the institution, and it was identified that this could only be achieved by ensuring that a wide range of stakeholders were involved throughout the process, including in the creation and refinement of any materials and processes.

Non-prescriptive

An important aspect of the project was that it was intended to both raise the profile of innovative practice and general good practice, as well as provide information and inspiration to people seeking to alter their practice. As each individual tutor's context and requirements are different, it was therefore important that the materials produced as part of the project provided several options for further investigation rather than a single 'preferred' option. For example, technologies are included based on there being good examples of practice within the institution, regardless of whether they are institutionally supported or third party tools freely available over the internet.

Consideration of Existing Frameworks

A variety of frameworks and models have been created elsewhere to address aspects of the problem. Several of these frameworks were investigated by the project team to identify whether they would directly meet the needs of the project, or could be adapted to do so. These were:

- 3E Framework (Smyth, 2012)
- Carpe Diem (Armellini and Jones, 2008; Salmon and Wright, 2014)
- Collaborate (Osborne, Dunne and Farrand, 2013)
- e-Learning Ladder (Moule, 2007)
- e-tivities (Salmon, 2002)
- SAMR (Puentedura, 2010)

- Viewpoints (O'Donnell, Masson, Ross, Virapen and Harrison, 2012)

While many institutions, including SHU, have found these to be useful frameworks, the investigation showed that, in general, these frameworks are predicated on the use of a particular process rather than being adaptable to existing practices. As this adaptability was a core requirement of the project, it was felt that these frameworks would not be suitable. Other aspects of existing frameworks that reduced their suitability for the project include:

- an emphasis on technological interventions (*SAMR; e-tivities; e-Learning Ladder; 3E*) or large-scale curriculum development (*Collaborate; Viewpoints*);
- a focus on developing individual tasks (*e-tivities; e-Learning ladder, Carpe Diem*);
- the need for a facilitated workshop makes resources less appropriate for individual use (*Viewpoints, Collaborate*);
- support only rapid change that limits the opportunity for a slower, considered approach (*Carpe Diem*) or mostly abstract thinking with little guidance on practical 'next steps' (*SAMR; Collaborate*);
- a focus on assessment design (*Collaborate*).

The investigation showed that there was no direct match between these existing frameworks and the requirements of the project. Therefore, the decision was made to create a new set of resources to meet the needs of the project and the institution. However, the investigation did highlight some activities that could be used to support the resources in workshops and provide a structure to the reflective process of academic staff thinking about their practice.

Process

Developing the menu

The project started from the intention of creating a set of resources that pedagogically aligned technologies in order to encourage a step change in the use of TEL at the institution. In accordance with the principles outlined above, the project work began with a request for all academic staff to complete an anonymous survey about their current teaching practice. The survey consisted of three open questions: a brief description of current practice, aspects of it that are working well, and aspects that could be improved. In order to encourage all tutors to respond, even those with little experience of using technology in their practice, there was no specific reference to technology in the survey. While number of respondents, 32, appears low in comparison to the entire cohort of staff with some teaching responsibility, many of those respondents were ones with whom there has been engagement when taking a technology focused approach, meaning a wider range of practice was identified than would likely have been the case otherwise.

The project leads analysed the survey responses to identify common teaching approaches used at the institution, the variety of activities and technologies used to support them and any improvements that could be made. The result of the analysis was a table of collated information showing some of the range of teaching approaches, and the technologies used to support them, at the institution. The authors performed a thematic analysis on the responses to identify distinct teaching approaches, and this information was supplemented with that related to technologies used by the respondents. In order to expand the breadth of practice captured at this stage of the process, refinements and additions to the gathered information were made by the project team based on their own experience and knowledge of teaching approaches being used within the institution, resulting in the creation of a draft framework. .

In order to ensure that the draft framework was appropriate, relevant and useful to tutors, all academic staff were invited to attend workshops where the framework would be discussed and amended according to their feedback. While the majority of contributions from the 112 tutors who attended a workshop were focused on adding to the detail

in each of the sections of the table and adding new approaches, the language in the framework was an area of significant debate that resulted in many changes. At the most fundamental level, this included terming the resource a ‘menu’ rather than a ‘framework’ in order to present it as a tool for the user to draw upon when developing learning experiences, as opposed to a required way of doing things. An unanticipated outcome of the workshops was that tutors stated that the table format, which had been selected simply to present the draft information in a physically manageable way, should be retained as it allowed quick comparison of different methods in a logical, structured way. These workshops also provided an opportunity to identify tutors whose practice could be captured as a case study and used to supplement the contents of the menu.

The workshops were spread over two weeks, which allowed the changes suggested at one workshop to be incorporated into the menu prior to the next workshop. Through this process of gradual, iterative development the menu grew into a resource that reflected the collective experience and knowledge of a significant proportion of the academic staff at the institution. Subsequent to the workshops, the resources were made available online and an open-ended survey was created to gather responses to the menu that had been produced, as well as suggestions for further materials to support and assist tutors in exploring and interacting with the menu.

Figure 2. Excerpted page from the menu

Building on the menu

As can be seen in figure 2, the menu contains links to supporting materials such as case studies and guidance material. Linking out to these resources allows the menu to focus on high-level information that supports readers in making decisions on whether a particular approach is suitable for their needs, while also providing further information for exploration once a choice has been made. In order to support the design principles of the project, the majority of these supporting materials have been created at SHU, therefore reflecting practice at the institution and the representing the types of resources that staff at the institution find most useful. Some of these materials existed prior to the project, such as several of the case studies, while others were created specifically to support the menu.

While the menu is designed to be used as a reference document for individuals wishing to alter and enhance their own practice, a set of workshop activities were created to support groups in using the menu, primarily as part of a curriculum design process. The workshops lead participants through a process of reflecting on their current practice, discussing ideas and experiences with fellow participants and TEL specialists, and result in the creation of an action plan outlining how individuals or teaching teams would like to alter their practice, the specific actions and deadlines involved and support requirements. Participants are the 'owners' of their action plans and keep the original document, but are encouraged to share it with the workshop facilitator so that any support requirements can be addressed. Where the action plan is shared with the facilitator, the participant is contacted by Technology Enhanced Learning specialists prior to the milestone date of each action to identify progress and to offer further support in meeting the action.

To support and direct the discussion part of the workshop, several activities were created. A card sort activity was produced to help participants identify and prioritise curriculum design elements and learning outcomes for their courses. Once the cards have been sorted, they can be used with the menu to identify teaching approaches and technologies that would support the aims of the participants. Another activity involved groups of participants being given a scenario outlining a common challenging teaching situation along with descriptions of three teaching approaches. The groups would then spend time discussing how each approach could be used to address the challenge in the scenario, with particular attention paid to the organisation of any activities and technologies to support them.

For each scenario there would be a ‘common’ or ‘obvious’ approach, a less clearly appropriate approach and a ‘wild card’, with the intention being that the activity would encourage the groups to share their experiences and think of new and creative ways to teach.

The menu, workshop and other materials are designed in such a way that they can be used in their entirety or repurposed for particular audiences or themes. For example, a subset of the resources and activities was created for sessions to explore different teaching approaches suitable for use in studio spaces, along with appropriate technologies. Focusing on specific aspects of teaching resulted in these tailored sessions generating richer conversation and deeper investigation, with participants drawing on their different range of experience and ideas. The flexibility of this approach has been important in encouraging engagement with the resources and ensuring that the workshops result in concrete, practical changes that can be implemented by the attendees in a realistic timeframe.

Results

The resources have been used with individuals, course teams and entire departments, as part of specific, TEL-focused development sessions, more general teaching practice sessions and integrated into existing processes, such as course review. Internal workshops have resulted in engagement with TEL from areas of the institution where there was traditionally little involvement in such initiatives. This reflects the original decision made to use a focus on teaching practice as a mechanism to encourage wider participation. To date, workshops have been held with three complete departments, two course teams and hundreds of individual staff members, resulting in changes ranging from small interventions to test the suitability of a specific tool, to the complete redesign of courses to fully embed technology appropriate to the aims of the teaching staff (Dobson, Taylor and Davies, 2015).

While a formal investigation into the impact of the project has yet to be carried out, informal, unsolicited feedback from staff shows that the approach taken in developing the menu, and the pedagogy first’ philosophy that it reflects, has led to its being favourably received by staff at the institution. The following quote, from an email after departmental workshop, is indicative of the enthusiasm shown by many staff members after working with the materials:

> “… that combination of learning approach + TEL idea + outline of benefits + case study is exactly what I’ve been looking for over the last while. I know there are loads of brilliant TEL possibilities, and have been to some really good case study presentations here, but I’ve been struggling to get all the ideas into one place... . I’m excited about some of the possibilities. Probably one of the most useful SHU documents I’ve come across in my two years here.”
> - Lecturer in Sports Sciences, email

The general response to the project and its outputs from staff and students participating in workshops and subsequently has been positive, as shown in the above quote. The underlying reason for this response is manifold but ultimately appears to stem from the consultative and participatory approach taken to the development of the resources. The local focus of the resources and the opportunity to contribute to the development of the project has ensured that staff and students have felt ownership over the menu and have therefore engaged with the development process in order to promote their own work and ideas.

The ‘standardised’ language of the menu is regularly identified by tutors in workshops as a major benefit of engaging with the project, and this is especially the case in those workshops with participants from across the institution rather

than a single subject area. Tutors in the sessions stated that there are often subtle differences in the meaning of particular terms within and between different disciplines, which can cause discussion to become overly complicated. The menu provides a reference point that can be used to frame discussions and explore these differences. In a similar way, the plain language descriptions used in the menu have also enabled its use with mixed groups of students and tutors as a mechanism through which to explore and discuss different methods of teaching and learning during co-design activities. This has been especially important when using the resources with staff on the internal development course for staff new to teaching in higher education, as it enables them to understand the ways that technology can be used to support learning even before they have formally encountered many of the underlying pedagogical theories.

The detailed, yet non-prescriptive nature of the menu, in particular, has allowed the resource to be useful to both innovators and beginners, and is a key aspect of the difference between this resource and the others identified during the initial investigation at the beginning of the project. For beginners, the menu serves to highlight technologies that are officially supported by the institution that would fit their current teaching approaches, while the more advanced or innovative staff members can use the menu for inspiration about different teaching approaches or ways of using technology to create a more active and engaging experience. This aspect of the menu allows it to serve as a showcase for a wide variety of innovation and good practice at the institution, which would not necessarily be the case had the menu only included approaches and technologies officially supported by the institution.

Next Steps

The menu is supported by the case studies of staff practice and serves as a structure by which individual case studies can be collated into a wider context. Therefore, it is important both that new case studies are added to the menu and that the menu can be expanded to include new teaching approaches that reflect the changing practice in the institution. Therefore, the menu is viewed as a 'living document' and will continue to be updated as necessary by the members of the core team, including through the addition of resources that reflect developments from other institutions and other projects at SHU.

One of the key outcomes of the project has been a standardisation, both across and within disciplines, of the meaning of many terms that previously had been ambiguous or had varied slightly between individuals. This standardisation has facilitated conversation on teaching practice among staff and students from varied academic backgrounds, allowing ideas and experience to be shared more widely. Going forward, the project will seek to further embed this standardised language in the culture of the institution through encouraging further discussions related to practice among groups of staff and students. These discussions will also help inform revisions to the menu and other resources.

While the menu and activities are intended as a set of resources to help individuals and groups explore their existing practice and identify future development, they have typically been used as part of an informal process where staff have reflected on their current practice, using the resources to identify teaching approaches and technologies for further investigation and small scale trials. In those instances where it has been used at an early stage of the formal curriculum design process, such as for new programmes, it has been successful in encouraging consideration of alternative methods of teaching and ways to integrate technology effectively. Integration of the resources, and underlying pedagogical philosophy, into the formal curriculum design processes of the institution will take place and, if successful, will help ensure an engaging, varied learning experience for students with technology being used appropriately and effectively.

Use by External Organisations

In addition to the positive response within the institution, there has also been significant interest in the menu and development approach from other institutions. Feedback from conference presentations and workshops has shown that the challenges that the menu was intended to solve are relatively common within higher education institutions. Several other UK and European institutions have expressed an interest in either using the menu itself, or using the approach to develop their own, localised version. To assist in this, the menu has been published with a Creative Commons licence to encourage others to build upon it.

As part of the development of the resources, some important lessons have been learned that would be valuable to other institutions seeking to make use of the menu and/or the process behind its creation:

- Support from senior staff is vital to ensure involvement of less technical staff
- Focus on local practice to help staff understand how to apply the teaching approaches and technologies with their own, likely similar, students
- Showcase innovative practice from less well-known people in the institution and encourage them to discuss it with other staff
- Avoid jargon, whether technical or pedagogical, to help keep people engaged, particularly for students and less experienced staff
- Encourage discussion and the sharing of practice at every stage of the development and use of the resources
- Embed workshops into existing institutional process, such as the design of new courses
- Resources should reflect what staff say they want and need, not what the project team thinks they need
- Adapt workshops and activities to the needs of the participants, rather than following a generic plan each time

Conclusion

The menu has a different emphasis than existing published frameworks and allows the resource to be used in a variety of ways, contexts and settings. The interest shown by other institutions and organisations supports the view that, in many higher education institutions, technology has often been introduced into teaching with little consideration of whether it is appropriate for the disciplinary context, needs of the students or aims of the teaching staff. While the menu reflects practice at SHU, the design principles underlying the resources are widely applicable and could be used by other institutions to develop similar resources that reflect their own situation.

The ‘pedagogy first’ approach to thinking about TEL offers an opportunity to advance the pedagogical use of technology within the institution, creating a vibrant, engaging learning experience for students and a varied, active teaching experience for staff. Through a focus on using technology as a way to enhance learning and teaching, rather than as an end in itself, a wider range of people, including both staff and students, have been able to contribute to discussions on TEL specifically, and teaching practice more generally. Ultimately, the menu provides a foundation for the future direction of TEL at the institution by forming a focal point for these discussions and providing indicative examples of how the approach can be applied.

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Figures

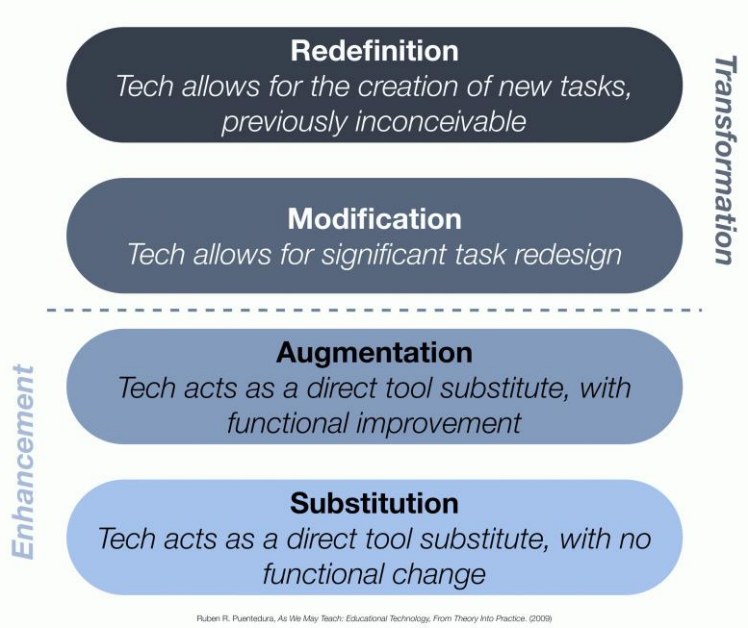

Figure 1. Puentedura's SAMR model (2010, p.3)

	Approaches to teaching and learning	Benefits	Indicative assessment artefacts	Technology to support and enhance	Benefit of using technology	Further information, examples and case studies
Information-focused Learning	**Lectures as pre-work (a.k.a. 'Flipped Classroom')** *Information and lectures provided as pre-work, contact time used for more interactive purposes*	• Students are able to engage with materials flexibly and at their own pace • Students come to sessions with a required level of knowledge and understanding • Allows tutors to repurpose time for more engaging teaching approaches	• In-class tests • Peer-reviewed presentation • Practical activities (formative)	• Blackboard Collaborate • Blackboard discussion forums • Blackboard tests • Electronic Voting Systems • Podcasts • Resource lists online • Video	• Allows a variety of media to be used • Students can access the information at a time and place to suit themselves	**Case studies:** • Illustrating difficult concepts using screencasts -Cecile Morris **Further resources:** • Flipping the classroom - Cynthia J. Brame • 7 things you should know about Flipped Classrooms - Educause **Related 'Teaching Nuggets':** • 10 minute screencast lecture • Tutor concept blogging • Webinar
	Resource-centred or facilitated discussion *Tutors present artefacts and the class undertake self-directed discussion about them. Students might also select the artefact*	• Encourages expression of feelings, values, opinions and beliefs, and sharing of experiences • Presentation skills may be practiced, building confidence and the ability for self-expression • Develops critical evaluation skills	• Demonstrations • Observation • Peer-review • Report	• Audio • Blackboard Collaborate • Blackboard Discussion forums • Photos • Resource lists online • Skype • Video	• Discussions can more easily include external parties • Record of discussion can be subsequently analysed	**Further resources:** • Teaching with discussions - Washington University in St. Louis • Learning artifacts in higher education - University of Illinois • Object-based learning - University College London **Related 'Teaching Nuggets':** • Social media • Webinar
	Micro-research *Students given a unique topic to research and later share their findings with the class*	• Development of presentation and/or other communication skills • Used for group work it can develop collaboration skills, but can also develop autonomy, independence and responsibility • Students can develop the learning materials for each other (potentially reusing them in subsequent cohorts)	• Infographic • Pecha Kucha • Poster • Presentation • Report • Student conference	• Audio • Presentation tools • Resource lists online • Video • Wikis	• Allows flexibility in presentation method and tools • Encourages use of different media types • Develops skills that will be useful in employment	**Case studies:** • Developing learning literacies with digital posters - Diane Rushton • Encouraging learner autonomy through small, self-selected research projects - Chris Corker & Sarah Holland • Promoting learner autonomy through media production and presentations - Mike Bramhall **Further resources:** • Self-discovery learning - E-Learning Faculty Modules **Related 'Teaching Nuggets':** • E-books • Peer feedback • Social media • Webinar
	Teacher-directed learning or traditional lecture *Students receive large volumes of information, particularly theoretical information, simultaneously with their peers*	• Time-efficient way of transmitting large amounts of information to large cohorts • Enthusiasm for the subject can be passed on by enthusiastic lecturers • Materials that cannot be shared with students (legally, ethically, morally, physically, etc.) can still be presented to them	• Examination • Report	• Electronic Voting Systems • Presentation tools • Twitter	• Increase engagement during sessions • Encourage interaction during lectures • Identify and clarify misunderstandings as they happen	**Case studies:** • Mobile innovation: Stimulating participation in lectures via mobile devices - Ben Abell **Related 'Teaching Nuggets':** • 10 minute screencast lecture • Webinar

Figure 2. Excerpted Page from the Menu