



## **Tutor Accessibility Support Kit (TASK): A Suite of Staff Development Resources for Inclusive Online Learning Design**

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Higher Education institutions around the world have seen a significant increase in the number of students with disabilities and it is evident that the needs of these students should be addressed. The use of accessible e-learning can be an enabling experience for disabled students, however, the development of inclusive e- resources in Higher Education is convoluted and poses significant challenges to educators, as developers of their own online materials, and to staff developers, who are responsible for the provision of on-going and valuable support to academics. This paper describes the results of an evaluation that explored the potential of TASK (Tutor Accessibility Support Kit) as a training and support tool for academics with little or no previous knowledge in developing accessible online learning materials, either as part of a Continuing Professional Development course or as an online standalone tool.

Keywords: Accessibility, Inclusivity, Continuing Professional Development, Staff Support

### **Introduction**

Disability discrimination legislation in the UK and across the world places a responsibility on Higher Education institutions to provide an accessible and inclusive learning environment for all students (for example DDA, 1995; SENDA 2001; European Union the EU Charter of Fundamental Right Article 21 and 26; European Disability Strategy 2010-2020; Americans with Disabilities Act (ADA), sections 504 and 508 of the Rehabilitation Act of 1973; Australian Disability Discrimination Act 1992). For the purposes of the Disability Discrimination Act a person is defined as disabled if “he has a physical or mental impairment which has a substantial and long-term adverse effect on his ability to carry out normal day-to-day activities.” (DDA, 1995). The Acts cover all aspects of an institution’s student services, including teaching and learning. This legislation requires providers to make “reasonable adjustments” for disabled people unless they can demonstrate that to do so would be unreasonable. Although “reasonable adjustments” is not clearly defined, effective use of information technology and online learning can result in “reasonable adjustments” (Ball et al., 2003).

HE institutions have seen a significant increase in the number of students with disabilities in the past ten years. According to the Higher Education Statistics Agency, during the 2008/2009 academic year, 67885 students reported a disability of a total of 939035 (7.23%) who enrolled for a first year course, both higher degree and postgraduate. Figures show that between 1995 and 2009 the number of students who declared themselves as having a disability grew by 58.4% (HESA, 2009). According to the same report, the vast majority of the students reported a specific learning difficulty, including dyslexia. Students are not obliged to report a disability during enrollment, therefore, the figures reported are derived from a subset, which may not be representative of the total student population, and the percentages could be significantly higher. Similarly, participation rates of disabled students in higher education in Australia have also been increasing. According to the Department of Education, Employment and Workplace Relations 2009 statistics report (DEEWR, 2009), between 2001 and 2009 there was an increase of 57.86% of disabled domestic students. Overall, the number of domestic disabled students in HE, in Australia, was 33636 or 4.2% of the entire domestic student population. While these proportions are small, the number of disabled students in HE is still significant and growing, and addressing the needs of these students to ensure full and equal participation is a challenge for all those involved in teaching and learning.

At the same time, as disabled students' participation increased, Universities worldwide have adopted e-learning systems as part of their learning and teaching strategy, largely through Learning Management Systems such as Blackboard and Moodle. This increased use of e-learning can be an enabling and liberating experience for students, giving opportunities for learning and participation that they might not otherwise have had (Pearson and Koppi, 2006). However, this can only happen if the learning activities and resources are designed to be accessible. According to Pearson and Koppi (2001), the same materials that provide opportunities can pose further barriers to those with disabilities. For example, although a number of students may have difficulty reading or comprehending text or distinguishing colours, many web based learning materials tend to be heavily text based. Others, with difficulty with organisation, structure or memory may find poorly structured and complex material difficult to navigate. Students with mobility problems, limited motor control or vision impairment may not be able to use a keyboard or mouse. Heavy use of multimedia can be a barrier to those who cannot see or hear.

Although specific material may be created or provided by specialist units or learning technologists, academics are largely responsible for producing and maintaining their own standard e-learning materials such as text documents, presentation slides, audio-visual material or spreadsheets. However, teaching staff are not always aware that there are disabled students in the classroom may not be aware of the requirements of disabled students, may not see it as their role to design accessibly, and cannot always appreciate the difficulties that disabled students face in accessing standard e-learning materials (Unterfrauner & Weiermair-Märki, 2008; Fisseler & Schaten, 2010). Although some academics accept the need to adjust their learning materials, others may regard the requirement to produce accessible online resources as a burden and a problem they have neither the skills nor the time to tackle (Bennett et al., 2003; Seale, 2006). Staff training is an important issue to consider when thinking about changing practice and implementing new accessibility and inclusivity initiatives in education. Seale (2002) suggests that it is imperative that institutions and those responsible for staff development consider support issues for academics. Ensuring accessibility and inclusivity will require commitment from academic staff, and this will mean that they will require on-going support. Evans (2002) also argues that there are enormous support requirements, relating to technical issues and material development, and therefore, those responsible for teaching disabled students should have sound support in all teaching circumstances.

Before academics learn how to produce accessible documents, they need to understand and appreciate the problem of access and empathise with the disabled student experience. Accessibility simulations can give an understanding of the effect a disability may have on the way students access online materials, certain training tools can offer support in inclusive design and they are both increasingly being used in education to support learning. This paper presents a study, which aims to address both the need to raise awareness of the problems disabled students face with access to and use of online learning materials, and the provision of appropriate and timely training materials to support the production of the most commonly used resources.

## Accessibility Simulations

Accessibility simulations can give an understanding of the effect a disability may have on the way people access web sites. They can be seen as a disability awareness tool, which promotes better understanding of barriers to access, and enables academics to empathise with the disabled student experience. Simulations have already been used successfully in staff development workshops to help teachers understand the problem of access and prepare them for the adoption of inclusive teaching practices (Pearson and Koppi, 2006). A number of very good accessibility simulations are available online and could be used in accessibility awareness training events, such as those produced by WebAim (<http://webaim.org/simulations/>) and SimDis (<http://www.techdis.ac.uk/resources/sites/2/simdis/>), which simulate various aspects of disabilities in areas such as autism, dyslexia, hearing and visual impairments; the Visual Impairment Simulator (<http://vis.cita.uiuc.edu/>) produced by the University of Illinois at Urbana/Champaign; Vischeck (<http://www.vischeck.com/>) colour blindness simulators. However, data from previous evaluations indicate that simulations designed specifically to reflect the educational context are required (Papadopoulos et al., 2008). To address the need for an explicit educational context, a set of accessibility simulations have been developed, based on interaction with a learning management system (Blackboard). The disabilities chosen to reflect in the simulations were based on the most common disabilities in UK HE according to the Higher Education Statistics Agency (HESA) (2009).



Figure 1: Colour Blindness Simulation (left) and Cataract Simulation (right)

A set of evaluations was created, to examine the effective use of accessibility simulations in raising awareness of the access problems for disabled students to online learning materials. The results of the evaluation demonstrated that the simulations are effective for raising accessibility awareness and promoting inclusive practices, but that on their own they could not support the development of accessible practice (Papadopoulos et al., 2011). The next stage of the research was to design an interactive training resource to supplement the simulations and provide practical support.

## **TASK (Tutor Accessibility Support Kit)**

The Tutor Accessibility Support Kit (TASK) prototype training and support tool, is designed to address the need for just in time practical support for academics to produce accessible e-learning resources. It takes the form of a repository of specially designed tutorials and is designed to be used in conjunction with the accessibility simulations. The tool can be used by staff developers, as part of a continuing professional development programme (CPD), or independently by teachers available on the desktop or online "anytime, anywhere". The accessibility tutorials on TASK are aimed at those with limited accessibility expertise and skills, the focus is on good design for all students and terminology specifically relating to accessibility has been kept to a minimum. One of the tool's core features is the ability for accessibility experts to contribute their own resources.

TASK currently incorporates two types of resources. The first is a series of videos that demonstrate examples of learning materials that are not designed to be accessible with the equivalent resource re-designed with accessibility in mind. The second set of resources is a collection of tutorials to provide step by step instructions for the creation of inclusive online materials, focused on the most common digital content.

### **'Good versus Bad Design' Videos**

Examples of online learning materials that have not been designed with accessibility in mind ("Bad Design") demonstrate and pinpoint specific problems. These examples are juxtaposed with examples of the same learning materials designed with accessibility in mind ("Good Design"), to pinpoint common problem and address easy fixes. There are currently five video examples of "Good vs. Bad Design" to cover the most commonly used resource types:

- Graph/Chart - this example demonstrates the issues involved in reading and interpreting graphs for students with colour blindness
- Learning object 1 – an example of a learning object, which introduces the Tool Box in Adobe Photoshop CS3 and the problems it poses to students with hearing impairments, along with the solution.
- Learning object 2 – an example of a learning object, which introduces a simple Flash CS4 animation and the problems it poses to students with visual disabilities, along with the solution.
- Presentation slides - an example of a PowerPoint presentation, which pinpoints a number of common accessibility mistakes and the way these issues can be solved.
- Word Document - an example of a poorly formed text document and the simple fixes that would make such a document accessible to students with a range of disabilities.

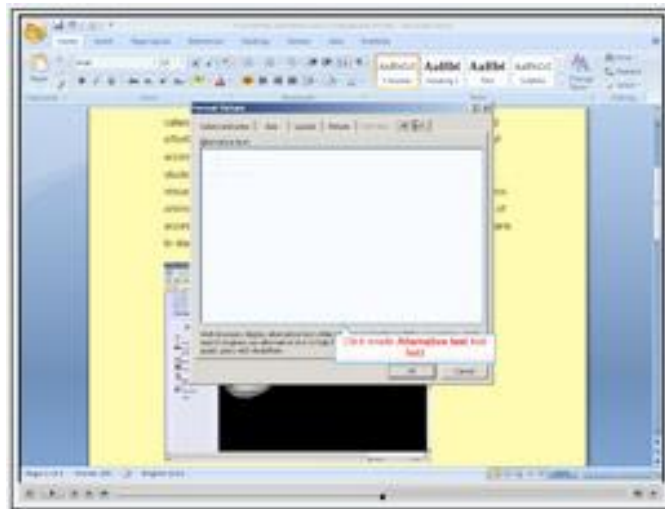
## Repository

The TASK repository is a collection of tutorials, designed to support the creation of accessible online learning materials or improve existing resources. At this stage there are four different categories based on the most common file types used in the LMS and created directly by academics:

- Accessible PDF documents
- Accessible Flash presentations
- Accessible Word documents
- Accessible PowerPoint presentations

The repository incorporates a number of different types of resource:

- Walkthrough presentations with voiceover: Each video is supplemented by captions and narration
- Text based instructions with graphics: simple step-by-step bullet point instructions with screenshots of each step to highlight the process
- Text based instructions only: simple step-by-step bullet point instructions.
- Graphics based instructions: simple tutorials based solely on screenshots to demonstrate each step.
- Step-by-step videos controlled by buttons: a walkthrough step-by-step video presentation, where the user is able to control the pace. Text instructions are included.



**Figure 2: A typical example of a training resource on TASK (Walkthrough Presentation with Voiceover)**

## Evaluation Procedure

The primary aim of the evaluation of TASK was to elicit the views of staff developers on the appropriateness of the resources and its potential as a training and support tool for academics (either as part of a CPD course or as a standalone tool) with little or no previous knowledge in developing accessible online learning resources. The evaluation of TASK was conducted as a workshop, at the 15th Annual SEDA Conference 2010, a conference for staff developers.

The format of the workshop was as follows:

- Context of the research
- Introduction to and demonstration of TASK
- Post demonstration questionnaire
- Recorded semi-structured discussion

A brief slide show presentation was given to provide an overview of the research. This was followed by a detailed demonstration of the tool. All the current types of accessibility tutorials were demonstrated as well as the process for the creation of new tutorials by staff developers. The participants were then asked to complete a questionnaire to provide feedback on their impressions of the tool as a staff development resource. A semi-structured discussion, which focused on issues around the use of TASK in Continuing Professional Development workshops, as a standalone, online, "anytime-anywhere" support tool and on the format of the current tutorials, concluded the session.

## Data Gathering

A questionnaire was the main data gathering method, which was utilised for the evaluation of TASK. The questionnaire was presented in four parts for an easier interpretation of the results. The first part aimed to determine the training methods used by the educational developers who participated in the study. The second part aimed to elicit the participants' views on the appropriateness of the types of resources that are available on TASK. Part three was designed to gather their views on TASK as a training and support tool. Part four of the questionnaire, deals with issues around the categorisation of the training resources.

The questionnaire includes 18 questions: four open-ended questions, 13 Likert-scale questions and one closed-ended (Yes or No). Two types of Likert-scale questions have been adopted. The format of a typical five level Likert item (strongly agree, agree, neither agree nor disagree, disagree, strongly disagree) is used for questions in part one and three of the questionnaire. All questions in part two follow a 1-5 rating scale format with variables ranging from "very inappropriate" (1) to "very appropriate" (5).

## Questionnaire Results

A total of 19 responses were obtained. Two questionnaires were invalid, as they were not fully completed, therefore, their results were discarded and not taken into consideration.

### Questionnaire Part 1

Part one of the questionnaire was designed to determine the methods and tools that staff developers use as part of their professional development strategy. The purpose of these questions was to determine the extent to which

TASK aligns with existing training methods. The results revealed that the majority of participants use a combination of online, face to face and print resources. Most of the respondents agreed that online tools are an important resource for training. This suggests that TASK would fit in with current staff development practice.

*Question 1: What training methods do you use to teach academics?*

94% of the participants revealed that they use a combination of online (computer based resources, online training materials) and offline (paper based resources, presentations, etc.) training methods to teach academics. Only one out of the seventeen participants replied that they rely solely on the use of online methods.

*Question 3: Online training tools and resources are important and should be used in academics training for accessible design.*

The majority of staff developers agreed that online tools and resource are important in teaching academics. 82% of the participants agreed or strongly agreed with the statement, while none disagreed (18% neither agree nor disagree).

**Table 1: Questionnaire Summary of Results – Part 1**

Question 1		Question 2	
Online methods	6%	Strongly Agree	47%
Offline methods	0%	Agree	35%
Combination of both	94%	Neither	18%
		Disagree	0%
		Strongly Disagree	0%

**Questionnaire Part 2**

This part of the questionnaire was designed to seek the views of the respondents on what they consider to be the most effective form of resource for supporting staff in learning how to create inclusive materials. The analysis of the results revealed that the most appropriate type of resources are step-by-step videos controlled by buttons and the walkthrough simulation videos with voiceover (M = 4.0588 for both, SD = 0.74755 and 1.02899 respectively). The least appropriate resource type is plain text based instructions without graphics (M = 2.2941, SD = 1.31171). The "Good vs. Bad" design videos were also very well received (M = 3.8824, SD = 1.16632).

*Question 4: TASK offers a number of different types/forms of resources. Could you please rate the types of resources below from a scale of 1 – 5, in terms of its appropriateness and effectiveness as an educational resource? (1 very inappropriate – 5 very appropriate).*

*a) Videos – walkthrough simulations with voiceover*

One of the most appropriate forms of resources for training academics, according to staff developers. Nine participants assented that this type of resource is appropriate (47% rated it 5 and 29% 4). Only 18% (three participants) found this type inappropriate.

*b) Text based instructions with graphics*

Thirteen participants (76%) agreed that this type of resource is appropriate and effective. None of the participants rated it with 1 on the scale, however, four participants rated it with 2 and 3.

*c) Text based instructions (no graphics)*

The majority of staff developers revealed their disagreement with this form. Almost 65% of the participants found the resource type to be very inappropriate or inappropriate, while only one person found it very appropriate.

*d) Instructions based on graphics (just screenshots – no text)*

Similarly, with the previous form, participants showed their disagreement with instructions based on graphics, without text. Almost 60% of the group members found the resource inappropriate. None of the participants found the resource to be very appropriate.

*e) Step-by-step videos controlled by buttons*

Arguably, the most appropriate and effective form of a resource, for training academics. Almost 80% of the participants agreed that step-by-step videos controlled by buttons is a very appropriate (5) or appropriate (4) type. None of the participants rated this type as very inappropriate (1) or inappropriate (2).

*f) "Good vs. Bad" design videos*

This was another appropriate example of a resource, according to staff developers. Twelve of them (70%) believe that this type is appropriate for academics' training and support.

*g) Auditory instructions (no graphics, no video)*

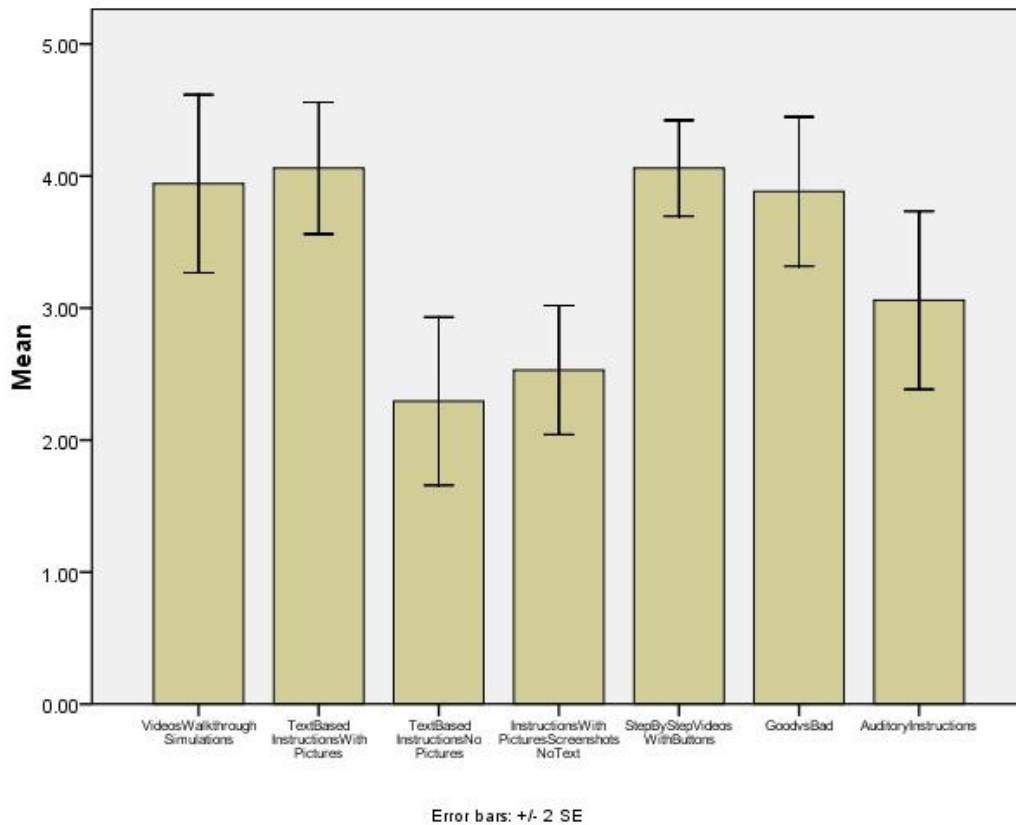
Participants' views on this form of resource varied.



**Table 2: Questionnaire Summary of Results – Part 2**

Question 4a		Question 4b		Question 4c		Question 4d		Question 4e		Question 4f		Question 4g	
1	12%	1	0%	1	35%	1	18%	1	0%	1	6%	1	18%
2	6%	2	12%	2	29%	2	29%	2	0%	2	6%	2	18%
3	6%	3	12%	3	12%	3	35%	3	24%	3	18%	3	23%
4	29%	4	35%	4	18%	4	18%	4	47%	4	35%	4	23%
5	47%	5	41%	5	6%	5	0%	5	29%	5	35%	5	18%

Figure 3 below summarises the perceived appropriateness and effectiveness by the participants.



**Figure 3: Perceived Form Appropriateness**

### Questionnaire Part 3

This part of this questionnaire aimed to determine staff developers view on the effectiveness of TASK as a training and support tool for academics, either as part of a CPD course or as a standalone tool. The results revealed that the majority of participants consider TASK as an excellent tool, which they would use in CPD courses and stated that it would prove very useful and beneficial for academics, who decide to use it independently.

*Question 6: As a staff developer, I will definitely contribute to TASK and add new resources*

Eight participants (47%) agreed that they would contribute to TASK and add new accessibility resources. Another 47% neither agreed nor disagreed and only 6% disagreed with the statement.

*Question 7: TASK is an excellent tool to use, in order to teach academics how to develop accessible online learning material.*

More than half of the participants assented that TASK is an excellent tool to teach and support in developing accessible online learning resources, for students with disabilities. 35% were indecisive and a small 12% found the tool inadequate for this purpose.

*Question 8: I will use TASK in my teaching sessions.*

Similarly with the previous question, more than half of staff developers would use TASK in their training sessions (41% agreed and 12% strongly agreed). Nevertheless, two participants strongly disagreed.

*Question 9: TASK can benefit academics, as they could use it independently to improve their skills in developing accessible online learning resources.*

Overwhelmingly, the participants agreed (76%) that academics could benefit, by using TASK independently in order to improve their skills in accessible and inclusive design (29% strongly agreed and 47% agreed). Only one participant disagreed.

**Table 3: Questionnaire Summary of Results – Part 3**

Question 6		Question 7		Question 8		Question 9	
Strongly Agree	12%	Strongly Agree	18%	Strongly Agree	12%	Strongly Agree	29%
Agree	35%	Agree	35%	Agree	41%	Agree	47%
Neither	47%	Neither	35%	Neither	29%	Neither	18%
Disagree	6%	Disagree	12%	Disagree	6%	Disagree	6%
Strongly Disagree	0%	Strongly Disagree	0%	Strongly Disagree	12%	Strongly Disagree	0%

**Questionnaire Part 4**

This part of the questionnaire aimed to determine participants' view on the existing categories of tutorials on TASK.

*Question 10: The training tutorials on TASK are categorised depending on the nature of the tutorials (i.e. Microsoft Office Word 2007 tutorials, Microsoft Office PowerPoint tutorials, Adobe Flash CS4 tutorials, etc.). Do you agree with this structure?*

Data reveals that participants' views on the chosen categorisation are balanced. Nine participants (53%) agree with this structure, while eight (47%) do not agree.

**Table 4: Questionnaire Summary of Results – Part 4**

Question 10	
Yes	53%
No	47%

## Results Discussion

Data analysis from the first part of the questionnaire as well as the discussion, revealed the importance of online tools in continuing professional development for academics. Although the participants still use traditional training methods, such as presentations and paper based materials, they also utilise online tools and computer based resources to support academics. The participants frequently use videos, audio files, video tutorials, other types of learning objects, specially designed modules on virtual learning environments such as Blackboard or Moodle, and wikis. One surprising finding was that none of the staff developers appeared to be using the specialist staff development materials for accessible online resources produced by JISC Techdis, such as the Accessibility Essentials (<http://www.jisctechdis.ac.uk/AccessibilityEssentials/>). JISC Techdis is a leading UK advisory service on technology and inclusion and provides advice to support the innovative use of technology within the education, business and community sectors. JISC TechDis Accessibility Essentials are a set of accessibility resources, providing practical information on making electronic documents more accessible. These are materials, which cover key accessibility and inclusion themes. Nevertheless, the vast majority of the participants (82%) agreed that online training tools and resources are important and should be used in continuing professional development. Two of the participants commented:

“There are so many high quality computer based, online training resources out there. It would be foolish not to take advantage of them.”

“...there should be a fair balance between online and offline resources. They are both equally important...”

TASK was generally conceived as a repository that would facilitate the contribution of resources by staff developers and accessibility specialists – both to capitalise on existing excellent resources and to provide a comprehensive resource for academics – a kind of one stop shop. However, only 40% of the participants expressed a willingness to add new training resources. Further discussion revealed that they would prefer tool with a "complete set of resources", instead of being engaged in discovering or developing the material themselves.

The discussion also revealed that a significant number of staff developers believe the tool could be used successfully in conjunction with other existing tools for academics training and support. One of the participants suggested that TASK could potentially be very beneficial when used with some of JISC TechDis Staff Development Materials or if existing resources are incorporated into it. It was pointed out that although there are high quality resources available, staff would benefit from a tool that could reside on their desktop and be introduced in staff development workshops and draw together these materials to provide a ‘just in time’ package.

A participant stated:

“...take comments on board and build on existing resource”

“...I can see this tool evolving to a huge resource, both for academics and staff developers, though a community of practice. In that case maintaining the site and keeping everything up to date will be the biggest challenge”

Staff developers suggested alternative types of tutorials, which could be incorporated on TASK. Podcasts and vodcasts are becoming increasingly popular, and a participant proposed a page with a list of podcasts and

vodcast tutorials, which academics could download to mobile devices. Respondents suggested that a combination of walkthrough simulations, with user controls and enriched with auditory instructions would be the most appropriate and effective form of resource. One of the participants also proposed a category or a page on the tool, which will include links to literature around issues of accessibility and inclusivity, such as journal and conference papers.

More than half of the staff developers would be interested in using TASK in their own teaching sessions, and furthermore, consider it an appropriate tool for this purpose. Data from both the questionnaire and the discussion shows that TASK could equally benefit academics in CPD sessions, as well as independently, in order to improve their skills in accessible design.

“Yet to be proven, but I believe it has potential. Depending on how it develops, this could be a great tool, in the hands of staff developers”

A number of participants raised concerns over the categorisation of the existing resources on TASK. They are currently categorised depending on the nature of the tutorials (i.e. Microsoft Office Word tutorials, Microsoft Office PowerPoint tutorials, Adobe Flash tutorials, etc.). Almost half of the participants suggested alternative tutorial categories, depending on the nature of the disability (i.e. tutorials for dyslexia, tutorials for motor impairments, tutorials for blindness, etc.).

## **Conclusion and Future Work**

This paper presented a study, which aims to address both the need to raise awareness of the problems disabled students face with access to and use of online learning materials, and the provision of appropriate and timely training materials to support the production of the most commonly used resources.

The requirement to address the needs of students with disabilities presents significant challenges to academics, as developers of their own e-learning materials, and staff developers, who are responsible for the provision of on-going support and training. This evaluation was designed to present a prototype accessible design resource to staff developers and seek their feedback to inform further development and ensure its appropriateness in supporting the development of accessible online resources.

A number of issues has been identified and need to be addressed, as a result of this evaluation:

- More examples of ‘Good versus Bad Design’ are required to demonstrate a wide range of common accessibility mistakes and ways of addressing them.
- Step-by-step user controlled videos, with auditory instructions proved to be the most appropriate type of resource. This is the format that should be adopted for new resources, which will be developed and incorporated into TASK in the future.
- A multiple search facility needs to be developed that will enable training resources to be selected by disability type, resource type or by task.

Ultimately the simulations and the tutorials will together form a framework for support, which combines the motivational aspect of simulations and a training tool, to support academic staff in designing accessible teaching material.

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