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The Development of the Teachers Attitudes toward Career Learning Index (TACLI)

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Abstract

Teachers play an important role supporting young people to form their career identities and to make successful transitions into further learning and work. In England there has been limited research that has looked specifically at the role of teachers and none which has tried to establish a measure of teacher attitude toward careers work. This article details the development of the Teachers Attitude toward Career Learning Index (TACLI) which was created to measure attitudes and engagement in career learning on teachers in England. The instrument went through a survey design process which included content validity and construct validity components. The process identified a five underlying factors in teachers attitude and engagement in careers work: (1) career learning and support practices, (2) school career strategy attitudes, (3) subject career learning attitudes, (4) career support attitudes, and (5) school career strategy practices. This process helped refined initial theoretical constructs regarding teachers' roles in careers learning.

Keywords

Teacher attitudes, career education, instrument development, career learning, principal component analysis

Introduction

Teachers play an important role supporting young people to form their career identities and to make successful transitions into further learning and work. In the UK, there has been limited research that has looked specifically at the role of teachers and none which has tried to establish a measure of teacher attitude and engagement in careers work. This article seeks to address this by documenting the development of the Teachers Attitudes towards Career Learning Index (TACLI).

School is a critical period for young people's career development. While many facets of career identity are formed very early it is in adolescence that they solidify and begin to be

operationalized (Archer et al. 2013; Porfelli and Lee 2012). Research has demonstrated that there is a relationship between young people's career thinking and their post-school outcomes (e.g. Stringer, Kerpelman, and Skorikov 2012). It has also demonstrated that schools can exert an influence on young people's career thinking through a range of purposeful interventions (Hooley, Marriott and Sampson, 2011).

A key way that schools can influence young people's career thinking is through the delivery of a program of career learning. In England schools are responsible for delivering career learning to students (Department for Education, 2015a). Career learning can take a variety of forms (see Dykeman et al. 2001 and Hooley et al. 2012 for typologies of career education activities). Common examples include teaching careers lessons, providing access to employers and work experience and one-to-one career support such as guidance counselling. Career learning is closely related to the area of vocational education and training which is often referred to as career and technical education (CTS) in North America. However, career learning is not confined to a particular educational pathway and can be an important part of schooling for young people following both academic and vocational pathways.

Much of the literature which has explored career learning within schools has emphasized the importance of holistic approaches which take place across students' entire period within secondary schools (Hooley et al. 2012). A key component of this is the development of an approach to inter-professional working which allows the effective collaboration of careers professionals, guidance counsellors, teachers, senior leaders, other school staff and external stakeholders including parents and employers. Morris (2000) has referred to this network of professional support as a *guidance community*. Gysbers' vision of the *comprehensive guidance programme* offered one approach to realizing this that has been influential in the USA (Gysbers and Henderson 2001). Within the UK, a tradition of career education has developed alongside an approach to partnership working between teachers and careers professionals (Andrews 2011; Watts 2008).

Within these whole school approaches to career development teachers play a critical role. However, teachers' attitudes toward career education and development have been under researched particularly within the United Kingdom. Teacher attitudes have been found to be an important factor related to behavior in relationship to a range of other curricular and co-curricular areas. For example teachers' attitudes matter in relation to engaging students in arts education (Oreck 2004); science education (Maier, Greenfield, and Bulotsky-Shearer 2013;); and in relation to the use of ICT in the classroom (Kale and Goh 2014; Kreijns, Vermeulen, Kirschner, van Buuren, and Van Acker 2013).

Studies on teacher attitudes and career education have largely focused on US policy and the US classroom experience. Akos, Charles, Orthner, and Cooley (2011) developed a nine-item scale to measure teacher perspectives on a career-relevant curriculum in middle school within the United States. The scale was based on an U.S. Office of Education report that emphasized the

importance of teachers' roles in enhancing the capacity of career education and student career exploration (Hoyt 1975). Two factors emerged from their instrument: (1) teacher beliefs about the purpose of schooling and whether the curriculum should prepare young people for future work and (2) teachers' perceived value of emphasizing work and career within their core classroom content. They found that teachers held high levels of agreement that the curriculum should prepare young people for future work and that there is value in emphasizing work and career within the core curriculum. They found significant differences in teacher attitudes based on gender, whether they taught science and whether the school had a high proportion of students from low socio-economic backgrounds.

In England, attempts to parse out the potential roles teachers can have in career learning has emerged as a result in significant changes in statutory policy surrounding careers work. In 2011 responsibility to ensure young people's career learning shifted from being the responsibility of local government (delivered through a careers service working in partnership with the school) to being the sole responsibility of schools (Hooley and Watts, 2011).

The way in which policy has reorganized careers work in England increases the importance of teachers' roles (Andrews and Hooley, 2017). Whereas in the past this could be left to an external organization there is now a need for schools to own this activity and to ensure that that teachers are competent and capable to manage this. Hooley et al. (2015) theorize six roles that teachers can play in the delivery of careers work in schools. They argue that that teachers can be a:

- **career informant** who is a trusted adult who has made career decisions and has experiences that can be shared;
- **pastoral supporter** who helps students to overcome personal challenges that include career issues;
- **subject teacher** who integrates opportunities for career learning into their teaching;
- **careers teacher** who delivers career education;
- **careers leader** who oversees the delivery of a school's career development program; or a
- **senior leader** who has overall accountability for the school including its careers program.

This conceptualization was used by Teach First, a large educational charity concerned with initial teacher education and teacher development, as a framework to create a suite of professional development programs for teachers.

The TACLI was initially developed as an evaluation tool to assess the impact of a Teach First professional development programs. The purpose of the intervention was to engage teachers in career learning and to increase their capacity to deliver career learning as part of their practice. In order to explore this teachers were tested before and after the intervention with the TACLI and changes in their attitudes and engagement to careers were reported (Hooley, Dodd and Shepherd, 2016). Simultaneously data gathered through the evaluation was used to validate the instrument.

The development and validation of such an instrument serves a two-fold purpose: (1) to test conceptual thinking around ways in which teachers can engage in career learning and to (2) provide a standard instrument for the evaluation of teacher development interventions designed to enhance teachers' capacity to deliver career learning. It is also possible that there may be an additional use for the tool to support teachers' self-reflection about their orientation to career learning and their capacity to deliver it. All of these different purposes are supported by the development and standardization of a robust instrument. This article therefore focuses on the validation process of the survey instrument.

Methodology

Instrument construction

The construction of the Teachers' Attitudes toward Careers Learning Index (TACLI) was influenced by the literature review and an international call for evidence conducted by Author et al. (2015). This research synthesized existing literature on teachers' roles in the delivery of career learning (e.g. Bassot, Barnes and Chant, 2014; McCrone et al., 2009; Oomen and Bom, 2013). Importantly it also extended this literature through gathering evidence from Austria, Finland, Hong Kong, Korea, Malta, the Netherlands, New Zealand, Northern Ireland, Norway, Switzerland, the Republic of Ireland, the United States of America and Wales. This research highlighted the diverse range of ways in which career learning is organized internationally, but also identified key areas of overlap in the roles that teachers play. This was summarized in the six-point taxonomy outlined above.

Based on the theoretical constructs set out in this literature review, a 40-item instrument was drafted using a Likert scale with a score of 1 (*strongly disagree)* to 5 (*strongly agree)*. These items corresponded to the roles of teachers identified in the literature review. The instrument sought to test both teachers' attitudes (do they believe that career learning is important and part of their role as a teacher) and behaviors (have they had experience of discharging any of these roles). Originally all behavioral items were phrased as confidence items. This change was made after the content validity stage. After the initial draft, the instrument was sent to eight researchers who helped to refine the instrument resulting in a 42-item instrument. One new item was added from the initial draft and one item became two items as a result of potentially ambiguous wording.

Content-validity judging

We adapted Lawshe's (1975) approach to content validity. Nine subject matter experts (SME), distinct from the initial pool of eight researchers, were approached to critique the development of the instrument. We placed the 42-item instrument in an online data collection tool with clear instructions and asked the SMEs whether they believed the items reflected the construct using Lawshe's scaling of "essential," "useful, but not essential" or "not necessary." We used Lawshe's content validity ratio (CVR) as criteria for item inclusion or exclusion. The CVR is a

formula based on the number of SMEs stating the item is "essential" and the total number of SMEs assessing the overall instrument. The CVR was determined for each item and items which did not make the threshold were considered for removal in the instrument. An open-ended comments section was added after each item for comments for each overall theme. We used these comments alongside the CVR as a final judgement during the exclusion of items.

As a result of the content-validity process 21 items were dropped from the instrument and three items were added. The new items were a part of a theme that nearly all SME suggested was missing which addressed the resources and support needed by teachers for career learning. A total of 24 items were included in the pilot instrument. In addition, the experts suggested we change our confidence questions to behavioral questions. This was revised for the instrument pilot. For example the item "I am confident that I can talk to my students about careers," was changed to, "I have talked to my students about careers."

Construct Validity

In order to test construct validity a pilot sample of teachers were recruited from government-funded comprehensive schools. Recruitment was conducted in a variety of ways. Mailings were sent out to teachers affiliated with Teach First. Requests were also sent out on social media. Teachers participating in a continuing professional development (CPD) course also circulated the survey to their colleagues. In total, a convenience sample of 526 completed responses were used in the analysis. A minimum total sample size of 500 or more is considered 'very good' in order to conduct PCA (Comfrey and Lee 1992). In addition the sample size has a subject to variable ratio of approximately 20:1. This exceeds the minimum requirement of 5:1 set out by (Gorsuch 1983).

All statistical analyses were conducted in SPSS 22. All negatively worded statements were recoded to reflect the scale of the majority of positively worded statements. PCA was conducted using a varimax rotation and a reliability analysis was conducted using Cronbach's alpha as the final steps in the development of an internally consistent scale to measure teachers' attitudes toward career learning. PCA was used to further reduce items to the instrument and to capture multidimensional aspects of the scale (Field 2009). Items with low communality values (< 0.5) and low factor loadings (< 0.6) were deleted from the instrument (Hair et al. 1998). Items which loaded highly onto two components were deleted from the instrument.

Results

Sample demographics

Approximately 65% of respondents were female while 34% were male. Approximately 1% of respondents identified as another gender or preferred not to say. Respondents ranged from age 21 to 65 years ($M= 36$, $SD=10.6$). Respondents had taught for 10 years on average ($SD=8.6$). This particular sample is similar from the overall population of secondary school teachers in the UK

where 62.4% of teachers are female and 37.6% are male (Department for Education 2015b). Table 1 presents the characteristics of the respondents.

Table 1. Descriptive statistics of survey respondents.

Variable	
Age	
Mean years (SD)	36.08 (10.62)
Gender (%)	
Male	34
Female	64.3
Prefer not to say	1.8
Region (%)	
North East	19.8
North West	0.4
Yorkshire and the Humber	12.5
East Midlands	1
West Midlands	15.4
East of England	2.7
London	27.4
South East	8.9
South West	12
Years teaching	
Mean years (SD)	9.66 (8.63)

Item reduction

All 24 items were analyzed using PCA. This version of the survey had twelve concepts which were operationalized as both behavioral and attitudinal questions. The scale underwent a total of three iterations before it was finalized. On the first iteration of the PCA three items were excluded due to low communality values (< 0.5). On the second iteration one item produced a low factor loading (< 0.6) and was excluded from the scale. The third iteration of the PCA found that one item loaded highly onto two components. This item was deleted from the scale. This resulted in a final 19-item instrument. As a result of the iterations and subsequent deletions some concepts were either represented as behavioral questions or as attitudinal questions however some concepts remained as both attitudinal and behavioral questions (e.g. talking to students about careers).

Final scale

The scale produced five factors with Eigenvalues higher than 1 explaining 64.98% of the variance (see table 1). On the final iteration, Bartlett's test of sphericity ($p < .001$) and the Kaiser-Meyer-Olkin (KMO) statistic (0.881) confirmed the appropriateness of the scale. Six items loaded onto the first component. These six items were all behavioral components associated with teachers' attitudes toward career learning. Five items loaded onto the second

component which was associated with attitudes toward schools career strategy. Three items loaded onto the third component which measured attitudes about within subject career learning. Three items loaded onto the fourth component which measured attitudes about being a careers supporter. Two items loaded onto the fifth component which was related to resources and support for career learning and support. In addition, SPSS 22 was used to generate three separate random samples comprised of 50% of the data set in order to conduct repeated random sub-sampling cross validation. Two of the three samples returned the same factor structure as the analysis with the entire sample while one sample produced a different factor structure.

Table 2. Principal Components Analysis of the Teachers' Attitudes toward Careers Learning Index (TACLI).

Item	Component				
	1	2	3	4	5
1. I have talked with my students about careers	.765				
2. I have directed students for more support with their careers	.813				
3. I have facilitated career conversations with the relevant people (i.e. other staff, parents, employers)	.754				
4. I have helped students consider how their learning might impact on their future career	.666				
5. I have enabled students to reflect on work-related learning	.599				
6. I have helped students think about career routes available in my subject area	.742				
7. It is important for schools to have a strategy relating to career and employability learning		.692			
8. It is important that schools regularly engage with employers		.678			
9. It is important that schools prepare young people for work and further learning		.651			
10. It is important that schools regularly engage with post-16 learning providers		.779			
11. It is important that schools regularly engage with post-18 learning providers		.711			
12. It is important that I help students think about career routes available in my subject area			.681		
13. It is important that I discuss how the subject area I teach is used within the world of work			.759		
14. It is important that students develop employability skills as part of learning my subject			.674		
15. It is important that I talk to my students about careers				.721	

16. It is important that I know where to direct students for more support with their careers		.716
17. It is important that I facilitate career conversations with the relevant people (i.e. other staff, parents, employers)		.631
18. The senior leaders at my school are involved in career and employability learning	.816	
19. The senior leaders in my school encourage me to integrate career and employability learning into my subject area	.828	

Reliability analyses using Cronbach's alpha were conducted on the five factors resulting in estimates between 0.706 and 0.858. The reliability estimate for the five components can be found in Table 3.

Table 3. Reliability analyses by component.

Component	Name	No. of items	Cronbach's Alpha
1	Career learning and support practices	6	.858
2	School career strategy attitudes	5	.801
3	Subject career learning attitudes	3	.748
4	Career support attitudes	3	.706
5	School career strategy practices	2	.712

Findings

Rescaled mean scores and standard deviations for each component were produced (Table 4). Variables were rescaled due to the lack of standardized ranges for each component in order to resolve issues of comparability. For example, career learning and support practices had a range from 6 to 30 while school career strategy practices had a range from 2 to 10. Variables were rescaled by using the following formula: $z = (x - \min x) / (\max x - \min x)$ where x is the original value of variable. After the components were rescaled all five components were set on the comparable scale of 0 to 1.

Mean levels of agreement varied with each of the components. The strongest mean level of agreement was with the 'school career strategy attitudes' component suggesting that on average respondents reported that it is important for schools to engage with career learning and to develop a school-level strategy for this area. However, respondents were least likely to agree on average with the corresponding component of 'school career strategy practices', suggesting that career learning practice at the strategic level may be occurring less often in the schools sampled.

With respect to their own practice, respondents were likely to agree on average that they believed it was important for teachers to provide career support to their pupils (career support attitudes), but less likely to agree that it was important to provide career learning as part of their subject teaching (subject career learning attitudes). As with the strategy components there was also a gap between attitude and practice, with respondents less likely to agree that they provide support than that they believe that it is important.

In general the initial findings suggest that the teachers in the sample are quite receptive to career learning, believe that it is important and that both the school and they should value it. They are less likely to agree that it should be brought into the core of their teaching practice, but are more positive about seeing it as part of their broader pastoral role. However, the data also suggests that despite these positive attitudes, there is a gap between theory and practice. It will be important to investigate these initial findings further through further analysis and through the future use of the TACLI. If these findings are substantiated they help to diagnose the barriers that exist around increasing the engagement of teachers in career learning, suggesting that, at least as far as the provision of career support goes, it is not a lack of commitment, but rather the challenges of implementing that commitment that is most important.

Table 4. Descriptive statistics for rescaled TACLI components.

Component	Mean (SD)
Career learning and support practices	0.70 (0.11)
School career strategy attitudes	0.90 (0.11)
Subject career learning attitudes	0.63 (0.08)
Career support attitudes	0.86 (0.13)
School career strategy practices	0.60 (0.21)

Limitations

Several technical limitations must be considered from the development and findings of the TACLI. The high levels of agreement for the three attitudinal components may mean that there is an open culture of career learning at schools in which respondents teach. However it could also mean that the instrument is picking up on a norm of social desirability whereby a teacher thinks he or she *should* have a positive attitude and therefore reports a positive attitude. Methods in which to reduce social desirability can be explored on refinement of the instrument. In addition convenience sampling was used due to resource constraints. If possible when the instrument is refined it will be important to engage in random sampling techniques.

Discussion

The initial conceptualization of this instrument was based on a 2015 publication which researched potential roles teachers could play in career learning in England. Hooley et al. (2015)

identified six conceptually distinct roles from their review: career informant; pastoral supporter; subject teacher; careers teacher; careers leader and senior leader. In operationalizing these for the instrument we added the additional distinction between attitude (do you think that this is important?) and behavior (have you actually done this?). The process of instrument development refined this theoretical model considerably. The rest of this section will consider why this refinement happened and what the implications are for theory.

Hooley et al.'s (2015) first two roles in the model make a distinction between the career informant and the pastoral supporter. However, the development of the instrument suggests that these may not be conceptually distinct areas. As a result of the instrument validation process these two areas blended together, resulting in two constructs that address *career support attitudes* and *career learning and support practices*.

The third role in the theoretical model is that of subject teacher. The findings of this study endorsed this construct with three items loading onto a *subject career learning attitudes* construct. In addition there is an item relating to subject teaching within the *career learning and support practices* construct. As a result career learning and support practices formed its own component while attitudes were distinguished between subject learning and career support attitudes.

The fourth role in the model relates to the delivery of career learning and education as a subject area in its own right. During the content validity stage many SMEs responded that items corresponding to teachers' roles relevant to careers learning as a curriculum area were not necessary for the audience (i.e. school teachers). As a result we removed these items prior to pilot testing. This may be because the tradition of career education in English schools has been substantially weakened since the loss of the statutory duty for career education as part of the Education Act 2011 (Watts 2012). Consequently it may be felt that the role of 'career teacher' or 'career educator' no longer exists in a sufficient number of English schools for it to remain as a meaningful construct.

The SME's decisions that items related to the careers teacher construct were unnecessary is particularly telling in response to wider policy changes beyond the remit of the validation of this instrument. However, it is also raises issues for the future development of the instrument as the delivery of dedicated career education by qualified teachers is an important aspect of most models of effective career learning (Andrews 2011; Hooley et al. 2012).
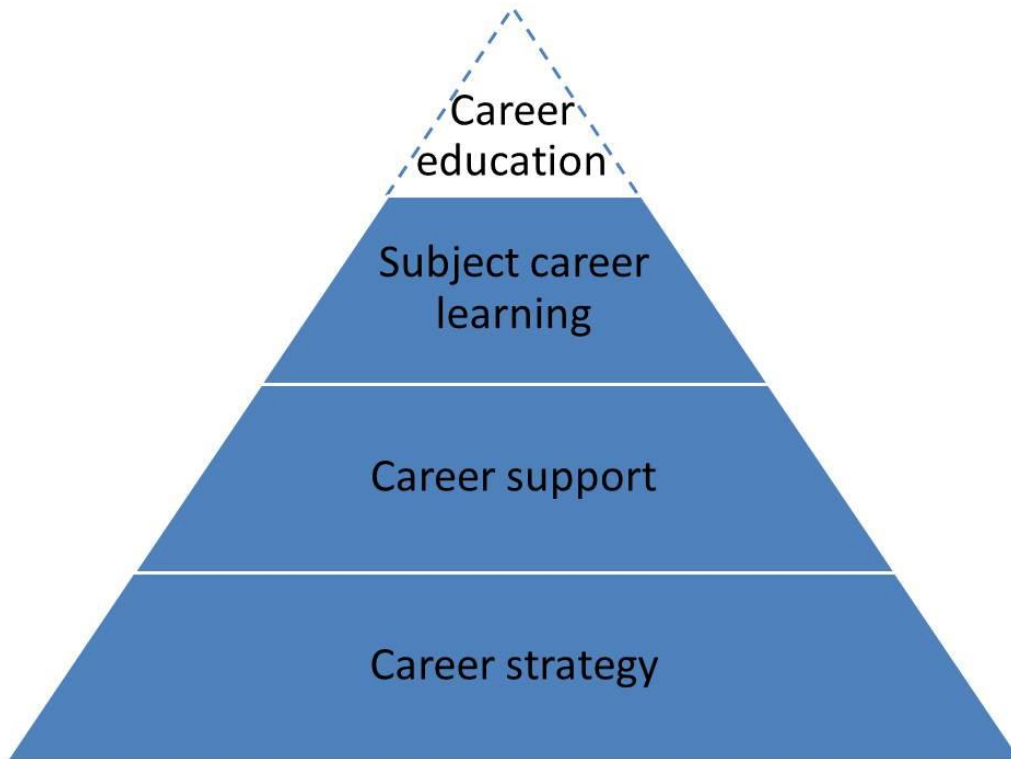
The fifth and sixth roles identified in the model were not successfully measured by the instrument. The roles of middle and senior leader are specialized roles and SMEs believed participants would be unable to conceptualize directly as part of their attitudes towards teaching or as part of their practice. However, in their place the series of statements that broadly represented school strategy and support at leadership level remained in the instrument. While these do not make a distinction between middle and senior leadership roles they do suggest that

teachers recognize the importance of strategic and structural factors in enabling them to provide career learning and support.

Two constructs emerged which can be described as *school career strategy attitudes* and *school career strategy practices*. The *career strategy attitudes* construct groups together both the objectives of school-based careers work (that schools should prepare young people for work and further learning) and the key enablers of this (planning and engaging with key stakeholders) while the *school career strategy practices* emphasize senior leader endorsement for career learning and support.

The overall development process of the TACLI instrument is suggestive of a four level model demonstrated in figure 1 with the final level currently weakly represented in practice and not measured by this instrument.

Figure 1. A four level model of teacher engagement with career learning.

Conclusions: The use and further development of the TACLI

The survey instrument provides a useful tool which can be used to measure teacher's attitudes and practices toward career learning. The instrument was developed to understand teachers' attitudes toward career learning and to serve as a tool to measure the impact of CPD activities on teachers' attitudes and practices in relation to career learning. The instrument went through several processes to increase validity. This included engaging the expertise of SME's as well as pilot testing on a large sample ($n=526$) of teachers in England. PCA and repeated random, sub-sampling cross validation were the final processes conducted. The PCA determined there were five underlying constructs measuring teachers' attitudes toward career learning within the instrument. In two out of three of the subsamples, the items retained their original factor structure. This exercise helped to somewhat strengthen the case for the unidimensionality of the five factors however the one subsample with a different factor structure suggest that further analysis is needed.

As the number of programs which seek to increase teacher participation in career learning increase so too does the need to understand teacher engagement in the area. It is anticipated that the instrument will be useful as an evaluation tool for CPD interventions which seek to engage teachers with careers work and to increase their capacity for practice in this area. The TACLI also has potential as a tool to aid teachers' reflection on their engagement with career learning and to allow school leadership to measure the level of engagement that exists across the teachers in the school.

In the first instance confirmatory factor analysis (CFA) will be necessary to further investigate and refine the TACLI. If this process does not confirm the factor structure from the PCA a further revision and refinement of the instrument will be necessary. In addition it will be worth exploring ways in which the instrument can mitigate social desirability bias. Changes to be considered may include the way in which items are ordered or expressed. While there are a number of areas for the future refinement of the instrument the current process suggests that it offers a good measure for examining teacher engagement in career learning.

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